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ABSTRACT

Proceedings of the Fourth International Seminar on Special Education (Cork, Ireland, September 8-12, 1969) contain papers relating to the following themes: special education personnel, identification of the handicapped, general aspects of early education, special education methods, early education programs for the mentally handicapped, and early education programs for children with sensory and motor handicaps. Also included are the program schedule, the opening and concluding addresses, a list of seminar participants, and an author and title index to the 25 papers. (RD)

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INTERNATIONAL SOCIETY FOR
REHABILITATION OF THE DISABLED

Proceedings of the Fourth International Seminar on Special Education

CORK, IRELAND — 8th - 12th SEPTEMBER, 1969

Sincerest thanks are due to the Chairman and Board of Cork Polio and General After-Care Association for generously providing the venue and staff for the Seminar.

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Proceedings of the Fourth International Seminar on Special Education

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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CORK, IRELAND

8th — 12th September, 1969

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The Editorial Committee regrets that it was obliged by financial considerations when preparing this Report to shorten the original papers read at the Seminar. The authors are asked to kindly excuse possible inaccuracies resulting from such condensation. Due to the limited time available it was not possible to return the papers to the authors for revision before publication.

FOREWORD

Participants from 27 countries drawn from all five continents attended this, the first Seminar on Special Education held in Ireland under ISRD sponsorship.

The main speakers were themselves of 12 different nationalities.

We trust that the resultant exchange of ideas both in the lectures and in the group discussions summarized in this Report will add momentum to the world-wide development of Early Special Education of the Handicapped (our Seminar theme).

JOHN BERMINGHAM,
Organizer

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PROGRAMME

Monday, 8th September

4.00 p.m. Registration

8.00 p.m. Opening Reception (sponsored by World Rehabilitation Fund)

Tuesday, 9th September

Morning **Opening Session**
Chairman : Alderman J. Bermingham, Seminar Organiser,
Cork, Ireland
Addresses by :
Councillor Pearse Leahy, M.A., Lord Mayor of Cork
Mr. Padraig Faulkner, T.D., Ireland's Minister for Education
Dr. Kevin O'Flanagan, President of I.S.R.D. World Congress and Chairman of National Rehabilitation Board, Ireland
Mr. I. Skov Jorgensen, Chairman of I.S.R.D. Committee on Special Education

11.15 a.m. Rev. Peter Dempsey, Professor of Applied Psychology, University College, Cork, Ireland
EARLY EDUCATION OF THE HANDICAPPED

12.15 p.m. Gunnar Niland, Principal, Anggardens Vocational School for Handicapped Youths, Gothenburg, Sweden
REPORT ON THE MAIN FINDINGS OF THE GOTHENBURG CONFERENCE

Afternoon **Papers dealing with the theme : People involved in the Education of the Handicapped**
Chairman : Norman W. Drummond, Chairman, Committee on Education, Council for Rehabilitation of the Disabled, Australia

2.30 p.m. Cyril E. W. Cave, H.M. Inspector, Department of Education and Science, England
THE YOUNG HANDICAPPED CHILD — SCHOOL, HOME AND COMMUNITY

3.00 p.m. Donal E. Cowing, Lecturer in Education, Graduate School of Education, The State University of New Jersey, U.S.A.
THE TRAINING OF SPECIAL EDUCATION PERSONNEL IN THE U.S.A.

3.45 p.m. Angelina Boric, Dean of Faculty for Special Education, University of Zagreb, Yugoslavia
UNIVERSITY TRAINING IN YUGOSLAVIA FOR THE SPECIAL EDUCATION OF YOUNG CHILDREN

4.15 p.m. Frances P. Connor, Chairman of Department of Special Education, Teachers' College, Columbia University, U.S.A.
THE EDUCATION OF HOMEBOUND HOSPITALIZED CHILDREN

Evening Folk Singing Session

Wednesday, 10th September

Morning **Papers dealing with the theme : Identification of the Handicapped**
Chairman : Elizabeth Rowe, Senior Education Officer, Special Education Section, Education Department, Hong Kong

10.00 a.m. Romaine P. Mackie, Independent Consultant and Lecturer on the Education of the Handicapped and Environmentally Deprived, Washington, D.C., U.S.A.
EDUCATION OF THE CHILD WITH FUNCTIONAL HANDICAP AS COMPARED TO THE EDUCATION OF THE CHILD WITH A TRUE CAPACITY HANDICAP

10.30 a.m. Thomas Kellaghan, Director, Education Research Unit, St. Patrick's College, Dublin, Ireland
PROBLEMS IN THE PSYCHOLOGICAL ASSESSMENT OF HANDICAPPED CHILDREN

11.15 a.m. Grace E. Woods, Medical Administrator and Consultant Psychiatrist, St. Ebba's Hospital, Epsom, Surrey, England
THE IMPORTANCE OF EARLY CLINICAL ASSESSMENT

1.30 p.m. Sight-seeing Tour of West Cork and Killarney
(Coaches sponsored by Bank of Ireland Group and Irish National Teachers' Organisation)

Thursday, 11th September

Morning **Papers dealing with the theme : Early Education of Handicapped Children — General Aspects**
Chairman : John McIntosh, General Secretary, Canadian Office, Council for Exceptional Children, Toronto, Canada

10.00 a.m. Vojislav Kovacevic and Kostantin Momirovic, Professors in Faculty of Special Education, University of Zagreb, Yugoslavia
SOME FACTORS DETERMINING SUCCESS IN SPECIAL AND NORMAL SCHOOLS

10.30 a.m. Emanuel Chigier and Miriam Chigier, Research Pediatrician and Psychologist, Medical Ecology Department, Hebrew University Medical School, Jerusalem, Israel
CULTURAL FACTORS IN EARLY EDUCATION

11.15 a.m. Friedrich Bittmann, Psychological Institute, University of Münster, Germany
EXPERIMENTAL STUDIES OF THE LEVEL OF ASPIRATION OF CHILDREN SUFFERING FROM MOTOR HANDICAPS

Afternoon **Papers dealing with the theme : Special Education Methods**
Chairman : Very Rev. J. Canon Bastible, Chairman, Cork Polio and General After-Care Association, Cork, Ireland

3.15 p.m. Donal MacKay, Senior Clinical Psychologist, Muckamore Hospital, N. Ireland
EARLY STAGES IN THE TEACHING OF READING TO MENTALLY HANDICAPPED CHILDREN

3.45 p.m. Martin McHugh, Director of Psychology, Cork Polio and General After-Care Association, Cork
SOME APPLICATIONS AND LIMITATIONS OF OPERANT CONDITIONING IN THE TRAINING OF SO-CALLED INEDUCABLE CHILDREN

4.30 p.m. Francine Robaye, Professor of Differential Psychology, Free University of Brussels, Belgium

AUDIOVISUAL AIDS AND AUTOMATED TEACHING DEVICES FOR CEREBRAL PALSIED CHILDREN OF HIGH I.Q.

5.00 pm.. Bernard Friedlander, Lecturer, School of Education, University of Wisconsin, U.S.A.

AUTOMATED TECHNIQUES EMPLOYING AUDIO/VISUAL REINFORCEMENT IN PERCEPTUAL EVALUATION AND BEHAVIOUR DEVELOPMENT WITH RETARDED AND DISABLED INFANTS AND CHILDREN

Evening **Public lecture**

8.15 p.m. Professor Isabelle W. Taylor, Department of Psychology, Russel Sage College, New York, U.S.A.

THE ROLE OF PARENTS AND COMMUNITY IN THE EARLY EDUCATION OF THE HANDICAPPED

Discussion by panel consisting of I. Skov Jorgensen (Denmark), John McKenna (Ireland), John Tenny (U.S.A.), with Martin McHugh (Ireland) as Chairman.

Morning **Friday, 12th September**

Papers dealing with the theme: Early Education Programme for Mentally Handicapped and Educationally Subnormal Children
Chairman: John Teegan, Professor of Chemical Spectroscopy, University College, Cork

9.30 a.m. Very Rev. J. Canon Bastible, Chairman, Cork Polio and General After-Care Association, Cork, Ireland

REPORT OF THE COMMISSION ON MENTAL HANDICAP IN IRELAND

10.00 a.m Luise Rossier, Assistant Headteacher, School for Mentally Retarded Children, Zurich, Switzerland

THE ZURICH SCHOOL PROGRAMME FOR THE MENTALLY RETARDED

10.30 a.m. Kevin McDonagh, District Inspector of Special Schools, Department of Education, Ireland

MATHEMATICS FOR MILDLY MENTALLY HANDICAPPED CHILDREN — AN EXERCISE IN CURRICULUM DEVELOPMENT

11.15 a.m. Anne Welsh Carroll, Associate Professor and Coordinator of Special Education, School of Education, University of Denver, U.S.A.

PROGRAMMING FOR THE POTENTIAL HIGH RISK LEARNING DISABILITIES CHILD

Afternoon **Papers dealing with the theme: Early Education Programme for Children with Sensory and/or Motor Handicap**
Chairman: Thomas A. O'Cuilleanain, Asst, Chief Inspector, Primary Branch, Department of Education, Ireland

3.00 p.m. Mother M. Nicholas, Principal, School for the Deaf, Cabra, Dublin, Ireland

EARLY EDUCATION OF THE DEAF

3.30 p.m. Karin Lundstrom, Councillor of Education and Head of Division, National Board of Education, Stockholm, Sweden

INITIAL SCHOOL PLACEMENT OF THALIDOMIDE CHILDREN

4.15 p.m. Ruth M. Lencione, Associate Professor Speech Pathology Programs, Syracuse University, U.S.A.

THE MANAGEMENT OF THE LANGUAGE AND SPEECH PROBLEMS OF YOUNG CEREBRAL PALSIED CHILDREN

4.45 p.m. Corrie Reye and Beatrice Le Gay Brereton, Medical Director and Educational Research Officer, The Spastic Centre of New South Wales, Australia

REPORT ON THE USE OF A PRE-SCHOOL TRAINING PROGRAMME IN PERCEPTUAL AND VISUO-MOTOR SKILLS WITH CEREBRAL PALSIED CHILDREN

5.15 p.m. General Summary by Coordinator of Discussion Groups' Conclusions

Evening Dinner and Dance

(Sponsored by Ivernia Southern Regional Tourist Board)

OTHER EVENTS

Programme of Free Papers and Films

A Programme of Free Papers and Films was held in St. Paul's Assembly Hall throughout the week

Visits

Visits were arranged to the following local Educational and Rehabilitational Centres :

1. Rehabilitation Institute — a vocational training centre for the handicapped.

2. Cork Spastic Clinic — an educational and clinical service for spastic children.

3. Cork Mental Welfare Association — a resocialization and work training centre for the mentally ill.

4. Brothers of Charity, Lota — a comprehensive scheme for mentally handicapped boys.

5. Cork Polio and General After-Care Association — services comprise a Child and Family Guidance Clinic, special schools, care centres and work training centres.

OPENING ADDRESS

by *Mr. Padraig Faulkner, T.D., Minister for Education*

Mr. Chairman, my Lord Mayor, Ladies and Gentlemen,

I am very glad to be present at this opening session of your seminar on the early education of the handicapped child and to have the opportunity of welcoming to Ireland such a distinguished gathering of experts in the field of rehabilitation. It augurs well for the success of the seminar that so many countries and so many disciplines are represented here. I hope that your discussions will prove very fruitful and that you will enjoy your visit to this country.

Your society, the International Society for the Rehabilitation of the Disabled, is undoubtedly one of the most active and most influential of international organisations working for the welfare of disabled people, especially for those who are physically handicapped. Through its affiliated national associations it has done and is continuing to do a great deal to make people and governments aware of the needs of the handicapped and of the steps which should be taken to meet these needs. In this country your host, the National Rehabilitation Board, is doing excellent work not only through the direct provision of services for the handicapped but also through the liaison it maintains with other government and voluntary agencies which are concerned with the welfare of handicapped persons.

I am very glad that when the Society decided to hold its 11th International Congress in Ireland it was decided also to hold this preliminary seminar on special education here in Cork. I appreciate that the Congress which is to be held next week in Dublin will concern itself also with special education as with other aspects of the rehabilitation of the disabled but during this week you will be able to devote yourselves exclusively to an examination in some depth of one vitally important side of special education.

As Minister for Education I welcome whole-heartedly occasions like this when teachers and other educationalists can sit down with representatives of other interested disciplines and consider critically what our handicapped children are achieving at school in the light of both present and expected future needs. It is generally agreed that a major aim of education for the handicapped child to-day is to enable him play as useful a role in normal society as his disability will permit. But daily life in our societies is becoming increasingly more complex because of technological developments and there is a constant demand for higher levels of education and vocational skill among the general population. The implications of this for the handicapped are very serious. I know that this is a problem of which you are only too well aware and that you will have it very much in mind during the course of the week.

I am interested too in the fact that you propose to concern yourselves during the seminar with the beginnings of education for the handicapped child. Is there scope at these early stages for the major improvements in the overall quality of special education which will be necessary to attain the aim of social integration? At any rate it seems that earlier and more precise diagnosis of disabilities and more enlightened attitudes on the part of parents and the general public towards the disabled child are ensuring that he is now beginning to receive special education sooner than was customary in the past. What must be done to ensure the maximum advantage from this early start? In view of the crucial importance which is attached to the first years of life in the intellectual development of the normal child, could more be done at the preschool stage to counter retarding effects of mental and physical disabilities? If so, what practical steps could be taken towards this end?

These are but a few of the questions you will wish to discuss as soon as you are given the opportunity to do so. Once again I bid you welcome and express the wish that your seminar will prove an outstanding success.

You will, I know, find here in Cork much evidence of what voluntary workers can, with State aid, achieve in catering for the handicapped. I feel, therefore, I should not conclude without paying a well earned tribute to all these workers for what they have achieved in this field.

Rev. Dr. P. J. Dempsey, Ireland

EARLY EDUCATION OF THE HANDICAPPED

If pigeons have been trained to play tennis, there seem to be small grounds for objecting to the possibility of the provision of early education and training for children, in particular, in this context, for the handicapped and retarded child. If from one to six years we neglect the organised systematic physical, perceptual, cognitive, social, ethical, religious and emotional stimulation of the child, our later labours will be more difficult and the children less likely to show the development and adjustments desirable if they are to cope with the many demands of human living. The loss of six years of authentic training constitutes a major additional handicap to the handicapped child, who, moreover, tends to cling to previously learned and possibly inappropriate patterns of behaviour and has a lowered capacity for coping with change we consider desirable.

From this position various subproblems emerge. Among them may be named the problem of early and differential diagnosis; of programming steps and phases with appropriate sequences of stimuli for such things as self-help, socialisation, the acquisition of simple verbal and numerical skills; the problem of the provision of suitable early help to parents, and of the organisation of nursery schools, kindergartens and day centres; the problem of the selection and training of professional personnel; and the problem of convincing administrators of the need for more research into these and other areas, and of establishing flexible organisations to deal with them.

Differential Diagnosis

Differential diagnosis is the theme of a number of papers in the Conference.

As a preliminary to these detailed discussions let us just say now that in diagnosis the ascertainment of the mental age and intelligence quotient of the child is of great utility for classification and initial research, but the M.A. and the I.Q. represent only the *mean* or average functioning of various levels of ability, and specific capacities may be better or worse than those suggested by the test results. Moreover while both measures can provide fairly valid measures of a person's current intellectual status, they are not completely reliable indicators of future performance.[1] In addition suitable and valid tests for preschool children do not abound and specific handicaps may not merely be difficult to specify but their investigation may be undertaken late when compensatory mechanisms and emotional reactions blur the clinical picture.

Two frequent problems in differential diagnosis are the differentiation of the familially retarded from the organically impaired, and the identification of the causes of communication backwardness.

The unreliability of organic signs on the WAIS and WISC made Strauss' syndrome very welcome. Strauss indicated that impulsivity, hyperactivity, faulty integration of motor performance, disorganisation in attention and disinhibition of controls under relatively slight stress were a behaviour pattern characteristic of many brain-damaged children. Unfortunately, some children may present this behaviour pattern without the presence of neurological deficiency and on the other hand, some brain-damaged children, reliably diagnosed neurologically, show passivity instead of hyper-activity, depression instead of excitation and relatively even emotional reaction to stress.

In order to develop the use of language the child needs intact organs of sight, hearing and touch; sufficiently intact cortical functioning to interpret what he hears, sees, feels and to comprehend symbols; the capacity to make appropriate associations, and through experience and learning to choose and execute the adequate response; a certain degree of intelligence and a psychological climate favourable to communication; psycho-motor functions which, on a cortical level, are responsible for the development of his body image, orientation in space, visuo-motor functions, the ability to focus on the stimulus presented and to perceive it as a whole against a background of unstructured material; the integrity, finally, of the mechanisms of phonation and articulation.

Kastein suggests a two-part diagnostic procedure for diagnosing the factors in communication backwardness, the first an interview with the parents, the second an experimental and test session with the child.[2] In the first part, the following details may be elicited: The kind of the pregnancy and delivery, the number and kind of siblings, the child's motor development, when he sat up, walked, his motor skills, sleeping and eating habits, illnesses, toilet training, feeding, dressing, how he conveys his wants, what kind of speech, sight and intelligence, when he said words and sentences, the history of hearing and speech disorders in the family, the language background of the family and the history of handedness therein.

The second part of the investigation involves actual observation of the child, his general motor functioning, the assessment of his reaction to symbols, the recognition of pictures, evaluation of the recognition of sounds and the comprehension of speech. Kastein suggests the use of such material as the Seguin Form Board, Goodenough Drawing, Bender Gestalt, Marble Board, while A. D. B. Clarke with others considers the Illinois Test of Psycholinguistic Abilities, with its nine sub-tests, as capable of furnishing a valuable profile of the strengths and defects of the child relative to language development.[3]

One thing seems however to be clear, namely, that an adequate differential diagnosis, which is basic to all subsequent rehabilitation and training must embrace not merely intellectual, perceptual and cognitive processes, social and emotional development, environmental history, but also include a thorough neurological investigation of the brain, sensory organs, and nervous system.

Programming for Training and Rehabilitation

Considering the past limitations of diagnostic procedures, it is remarkable how much those involved with the upbringing of the handicapped and retarded were able to achieve, through their dedication, observation, interest and sympathetic intuition. If any criticism is to be made, it is that too heavy a burden was put upon their shoulders, that systematic and scientific study was too long neglected in this area. From a number of papers at this Seminar it is clear that the provision of adequate help in the shape of programmes of planned sequential rehabilatatory activities will be shortly to hand. Mr. McHugh takes up the basic question of operant conditioning in relation to the training of low I.Q. children. Dr. Frances Connor stresses that a *planned sequence* of educational activities is the right of all infants recognized or suspected of having a crippling condition or a special health problem.

Dr. Ann Carrol considers programming for the potential high risk learning disabilities. The problems of reading and mathematics are the concern of Donal McKay and Kevin McDonagh. The former discusses early stages in the teaching of reading to mentally handicapped children, the latter the teaching of mathematics to mentally handicapped children. Both Francine Robaye and Bernard Friedlander are concerned with the use of automated devices. The former focuses on the use of automated teaching devices for cerebral palsied children, the latter on automated techniques employing audio-visual reinforcement.

If in this approach a careful step-by-step analysis has been conducted, with appropriate cueing and prompting built in, if sequential intelligibility be catered for, and adequate motivation ensured by immediate knowledge of results plus ample supplies of extrinsic reward and encouragement, there seems reason to hope that the handicapped child could progress very far in his early development. In addition the recurrent despondency and heart-break of parents and teachers at the lack of progress might be considerably reduced.

Parent Education

The Irish Constitution acknowledges the primary rights of parents as educators. By implication therefore it acknowledges that appropriate help should be provided to enable them fulfil their educational role. Dr. Isabelle Taylor and Cyril Cave treat this problem from their respective angles. As Dybward suggests [4], parents require to know something of the problem they're facing. Not knowing what the issue is, what to do, or what can be done is a primary source of emotional anxiety and disturbance to them. Hence the value of sheer information concerning the nature of the handicap, what it means to the child, what his main needs are, what he can learn, how to handle him, the appropriate techniques for coping with feeding, cleaning, self-help, socialisation, communication, how to help with the acquisition of desirable skills and the development of abilities and aptitudes. All this involves first a variety of professional help, from physicians, nurses, pediatricians, psychologists, psychiatrists, social workers. In addition a community can organise to release the mother to go shopping, and by part-time care, night care and baby-sitting services alleviate the strains of non-stop parental vigilance. There is also the question of nursery schools and kindergartens accepting handicapped children and integrating them within their organisation. In South Australia this is done on a state-wide basis. Much insistence as well has been placed on ensuring the sheer physical fitness of the handicapped (who need more rather than less exercise than the normal child), not just for physical health and stimulating the appetite but for providing stimulation for the mind and promoting better social contact, adjustment and development.

Training of Personnel

A consistent, continuous, enlightened affection is probably the most basic ingredient in the educational and training process of any age. One can distinguish but not separate light and love. Love without enlightenment is blind. The provision of enlightenment is a professional job, for trained people. Their training, in turn, depends on the clarity with which objectives are seen, the thoroughness of the analysis of problems, the quality and soundness of basic and applied research. Two papers are devoted to this problem in the Seminar.

Donal Cowing discusses the training of Special Educational Personnel in the U.S.A., while Angelina Boric describes University Training in Yugoslavia for the special education of young children.

In *conclusion* there are two general formulae that might be worthy of consideration by the participants in the congress. The first is that behaviour or performance is a function of personality and environment, B=f (P.E.), the second that performance is a function of ability, motivation and training B=f (A.M.T.). To understand and to stimulate achievement and development it is important to know the person and to be aware of the impact of his physical and social environment. We must know his abilities and disabilities in detail, his interests actual or potential, his disposition and the physical and physiological determination of it, as well as the nature and impact of his family, locality and school surroundings. To the extent that the environment is a source of stimulation or otherwise (and the attitudes of people to a child's handicap are, as Dr. Chigier states, a very significant factor), the personality of the child will tend to respond and progress or grow increasingly inert. The second formula tallies with this, in specifying ability, motivation and training as factors in achievement. With less ability, but more intense motivation and more skilful training, the physically or mentally handicapped, in all their varieties, can be led to a considerable, and possibly undreamt-of degree of intellectual, motor, social and occupational achievement.

REFERENCES

1. See H. C. Gunzburg, *Junior Training Centres*, N.A.M.H., London, 1966, p. 7.

   See the same author's *Social Rehabilitation of the Subnormal*, Balliere, Tindall and Cox, London, 1960, and his Progress Assessment Charts available from N.A.M.H., London.

2. See S. Kastein, *Differential Diagnosis in the Special Child*, Special Child Publications, Seattle, Washington, 1965. pp. 163-221.

3. See *Recent Advances in the Study of Subnormality* and R. Bateman, *The Illinois Test of Psycholinguistic Abilities*, Urbana, Illinois, 1964.

4. *The Mentally Handicapped Child Under Five*, by G. Dybward, Oxford Society for the Mentally Handicapped, 1968.

REPORT ON THE GOTHENBURG SEMINAR, AUGUST, 1968

by *Gunnar Niland, Sweden*

THEME: *The Role of School in the Rehabilitation Programme*

The seminar in Gothenburg, held from the 5th to the 8th of August last year, was the first of its kind.

The intention was to invite to the Gothenburg seminar those who were responsible for or engaged in the further development of handicapped children after the latter had left basic or elementary school and as young persons must seek out ways for obtaining continued educational or vocational training and finally integration into working and social life as far as this is possible.

Personally, I had the privilege of taking part in the third seminar in Special Education in Sonnenberg. As one who is active in the educational training sector for handicapped young persons, this seminar was of great value to me. I wished that more of my kind could have had the chance of taking part in exchanging international experiences and of making contacts across national borders with fellow workers faced with the same problems. The idea of a seminar within the educational training sector for the young handicapped took root.

On my way home, I had the chance of discussing this question with my friend Skov Jörgensen. He at once became interested, and thanks to his initiative and energy, the Gothenburg seminar came into being as a result of Danish-Swedish collaboration.

At first, this seminar was limited to European countries and to a maximum of 60 participants. The interest proved to be great, and when the 60 participants gathered, there were representatives from the U.S.A. as well as from Asia and Australia. UNESCO and ILO had accepted invitations, and their representatives made valuable contributions to the seminar with their views and experiences from their worldwide activities.

Mr. Chairman, I will not take up precious time by giving a more detailed account of this seminar. The printed final report with complete programme, list of participants, lectures, and summary is available in so many copies that everybody at this seminar who is interested can easily familiarize himself with the contents.

Finally, I would like to emphasize three of the eleven points in the seminar's "Main Conclusions" on pages 12 and 13 in this Report:

"Successful integration of handicapped children into normal schools is dependent on the teachers responsible having specialised knowledge which enables them to cope with the many and varied problems involved; they should also have a layman's understanding of the effects of handicapping conditions as well as a thorough knowledge of the various rehabilitation services available in the community."

"Closer links should be established between school and vocational counsellors well in advance of the pupil's time for leaving school so that all concerned are aware of the living and learning needs of the handicapped. These may

have an important bearing on their successful establishment in a form of employment which makes the fullest possible use of their abilities and potentialities."

"It is essential for team work to be established between all those involved in the educational, medical, social and vocational processes for the young handicapped."

Mr. Chairman,

If I may end with a personal wish for the future, I would express it thus:

May this Gothenburg seminar escape the fate of becoming a non-recurring phenomenon. If it be at all possible, let us extend the team work at the planning of the next seminar in Special Education — the fifth.

I believe it to be valuable that all teacher-categories who are engaged in education and training of handicapped children and young persons should have the chance to join in an exchange of experiences. These seminars in Special Education are, in my view, the best platform for this.

The final goal is common to all who work among handicapped children and handicapped young persons: to attempt to discover better and perhaps new pathways that can lead them to the final goal of integration, to make it possible for many of them to find a place in social and working life. We must never forget that this is the real aim of all integration efforts.

C. W. E. Cave, England

THE YOUNG HANDICAPPED CHILD — SCHOOL, HOME AND COMMUNITY

I propose to consider some of the needs of young children with a handicap and some of the ways in which we are trying to meet them in the U.K. Dr. Mary Sheridan has succinctly described the ideal as: "Full assessment, prompt medical and surgical treatment, help and guidance for parents, appropriate education and training for the child, and continuing supervision of health and welfare with final placement in the community or in special care".

The early years are a crucial stage in the development of children, for at this time they are developing rapidly both physically and intellectually. At birth the child is actually growing faster than at any subsequent period of his life—a rate of physical growth that continues for two or three more years and is not paralleled until puberty is reached. At birth the brain is a quarter of its adult weight; in six months, a half; at 5 years 90%. Early intellectual development appears to be equally rapid: Bloom has estimated that 50% of the variation in intelligence at 17+ is accounted for by the age of 4; "learning patterns are partially established before children enter school . . . and one-third of the eventual attainments of 18 year olds is developed before the age of 6." *

Though the pace of development differs from one child to another, there is normally a clearly defined sequence in the emergence of physical and mental abilities. Grosser physical movements precede the finer; a child cannot achieve

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*Bloom, B. S.: Stability and Change in Human Characteristics. 1965.

the fine discrimination needed in reading and writing before he has learned to distinguish between larger shapes and sizes. Piaget and Inhelder have shown that intellectual powers also seem to develop in sequence: a sensori-motor phase precedes concrete thinking, and concrete thinking precedes abstract thought. Most children begin to talk about the age of one year: gifted children have mastered virtually the whole syntactical structure of their mother tongue by the age of three years. Experience with deaf children, however, suggests that facility for distinguishing the sounds of speech (and therefore the acquisition of language) diminishes after early childhood; certainly children seem to be able to acquire a second language far more easily than adults. Thus the growth of intellectual abilities proceeds through regular predetermined stages, and for each stage there is a period of maximum receptiveness. This is not to say that after the critical period has passed the opportunity is lost for ever (though some of the effects of early cultural deprivation appear to be long-lasting), but merely that it is more difficult to acquire it later, and in the meantime the sequence of learning may be distorted.

The healthy emotional as well as the physical and intellectual development of the child depends largely on his relationship with his mother in the first year or so of life. A baby who is not loved and cuddled in early infancy may show signs of emotional disturbance or even of pathological behaviour later. John Bowlby and others have also pointed out that if young children are deprived of affection then not only their emotional but even their physical and mental development may be upset. Normally the pattern of interaction between mother and her baby subtly reinforces every stage of his development: his every achievement evokes approval from his mother who thus reinforces success and encourages further effort. New experiences are accompanied by the language to clothe them and this, in turn, facilitates the further growth of mental abilities and the power to think conceptually. So the young child normally learns naturally and pleasurably. But a handicap can not only impose stresses on the rest of the family; it can also distort the normal pattern of interaction between mother and child in a way far subtler than those usually described as rejection, over-protection, or withdrawal. "The normal sighted child, for example, learns by watching and imitating the actions of those around him. He shows pleasure and excitement at the approach of his mother; the blind child may remain motionless so as to hear and analyse the sound of her approach, and this may give the impression of indifference, and give rise to feelings of disappointment and unhappiness and incline the mother to talk less and pay less attention to the child". *

Early Intervention Essential

Obviously, if the adverse effects of a handicapping condition on the child and his family are to be minimised, the earliest possible intervention by the medical, social, and educational services is essential. An important step in the development of preventive services in the UK was the Children and Young Persons Act, 1963, which states that "it shall be the duty of every local authority to make available .... advice, guidance and assistance to promote the welfare of children". The emphasis of the Act is on the supportive role of the welfare services : to prevent the breakdown of the family unit with consequent adverse effects upon the development — and particularly the emotional development — of children. Services under this Act are still developing but a particularly interesting innovation is the Family Advice Units being set up in Health Clinics, Infant Welfare Centres, Probation and Welfare

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* Developmental Medicine and Child Neurology, 1968, 10,736—740.

Departments. In these Units expert advice is available or is obtained, families at risk of breakdown are detected and the necessary services alerted or provided.

Yet, however effective the preventive services, including the widely used ante-natal services, there will always be some children born with a congenital defect or who acquire a handicap later in life. Recent advances in medicine and surgery are also now preserving the lives of children who formerly would likely have died. A case in point is children born with spina bifida. In most cases the baby is operated on within hours of its birth. This situation shows most clearly the need for close co-operation of many services. The paediatrician is called to give an explanation to the parents; continuing medical care will be needed for the child after the operation as will advice and support for the parents. For some time at least the child is likely to remain in hospital. Many hospitals now admit not only the child but his mother so that she may learn how to manage him in the years ahead and by her very presence minimise the risk of adverse emotional effects that could arise from separation. On discharge from hospital, children such as these will normally be placed on the list of children needing continued observation. This duty usually falls to the Health Visitor who is often able, in her joint capacity as school nurse, to provide a valuable link with the School Health Service when the child comes to go to school. For parents she can provide continuing support during the often prolonged stages of treatment and care. One need for the future is increased provision of various forms of short-term residential care for handicapped children so as to relieve the parents at times of the anxiety and the stress that such children can impose. The hostels now being attached to many of the training centres for subnormal children are showing how valuable is the relief this affords the parents.

At risk registers

Although severe physical and sensory handicaps are now almost always detected early and the child placed on the register of handicaps, lesser handicaps such as slow development, minor sensory deficits and mental retardation are more easily overlooked or indeed may not become apparent until a child begins school. Most Local Health authorities now maintain a register of all babies whose family history or circumstances before, during or after birth put them "at risk" of physical or mental handicap. There is general agreement that such registers are of great value in helping to keep under observation all children who may show faulty development; there is less agreement which children should be placed on them. Some paediatricians estimate that some 10% of children are "at risk"; others believe that every young child is vulnerable in his first years of life, and should accordingly be kept under observation.

The recent report on "Primary Education in Wales" (HMSO 1968) suggests that the value of "at risk" registers could be enhanced by including the children of families which already have socially and culturally under-privileged children or in which there are disturbances of personal relationships or known emotional neglect; in which a member has a serious handicap or mental disturbance; which are liable to stress because there is only one parent; or those liable to disruptive crises in which parental care can became inadequate unless outside support is available. The recent Summerfield report on "Psychologists in the Educational Services" (HMSO 1969) advocates that psychologists should play an increasing part in the early observation of children liable to faulty development.

In England and Wales the necessary statutory services are available almost everywhere but their co-ordination still presents problems. Recent investigations have shown that even where services are generously provided they often seem to the parents of handicapped children to be deficient and piece-meal. This problem was recently the subject of a joint Circular (9/66 March 1966) of the Ministry of Health and the Department of Education and Science. It asked local authorities to review their services in order to achieve a greater degree of co-ordination ensuring (1) the earliest detection and complete diagnosis of handicap, taking account of all evident or suspected disabilities, and an assessment of practicable measures to deal with handicaps, (2) regular review of medical, educational and social factors to enable the best possible service to the child and his family, continuing into employment and adult welfare. The Seebohm Committee * saw a solution to the "problem of co-ordination between related and separately administered Services" in the creation of a new "Social Service Department" to include and co-ordinate a number of services already provided by Health, Welfare and Educational Services including the Social Care Services for Schools as well as Child Guidance Services. Whether such a proposal would achieve its purpose is speculative in a field where ultimately co-ordination depends on the readiness of individuals to co-operate. The report is at present under consideration by the Government departments concerned.

In England and Wales local education authorities are empowered under the Education Act of 1944 to provide special education for handicapped children from the age of two. Hitherto such services have been provided mainly for children with visual and auditory handicaps. Owing to the small number of such children, nursery school provision has usually been made in boarding schools, but a growing reluctance to send a young child away to school has led greater emphasis to be placed on the peripatetic advisory services, which enable a child to go to a nursery school or class near his own home. Growing realisation of the importance of early auditory experience for deaf children has led, in this country, to the provision of hearing aids, where appropriate, for children as young as six months, and mothers are being taught to play a key role in the early education of their child. The recognition of the importance of this work is leading to consideration in my Department as to whether, in a revised Education Act, special education in some form should not be made available for a handicapped child from the moment he is born.

Pre-school provision

A recent development in England and Wales has been the steady growth of educational provision for young handicapped children before the age of five. Much of this is in the form of nursery classes, reception classes, or in "diagnostic" or "assessment" units (though the nomenclature varies, the functions are broadly similar). The function of the classes is to combine early special education and assessment for young children with guidance and support for the parents. One or more of these units is to be found in most of the major centres of population and the number is increasing steadily. Most units accept children from the age of three, though some children enter even before the age of two. Most of the units provide facilities for long-term comprehensive assessment (diagnosis has usually been completed before admission) in a good educational setting where there are ample opportunities for play and a ratio of adults to children sufficient to encourage good language development. Many units admit children with a wide range of different handicaps, and by doing so, overcome the need for young children in the rarer handicap groups to go away to

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* Report of the Committee on Local Authority Allied and Personal Social Services, HMSO, 1968.

school. Some units combine education and continuing team assessment most successfully; others function primarily as reception classes attached to existing special schools. One or two perform a more specialised function for a particular type of handicap. A particularly interesting example of the latter is the assessment unit attached to the Percy Hedley School for Spastics, Newcastle upon Tyne. Mothers living locally bring their cerebral palsied babies (or are brought with them) for one or more sessions a week over a period of months or even years; parents living further afield come into residence with their children for anything up to a week. The children (aged from a few weeks upwards) are able to play in a well equipped nursery under the eye of a paediatrician, speech therapist, physiotherapist and teacher, who observe and test the children and discuss their handling and development with the parents, who thus gain the knowledge, re-assurance and hope they so urgently need. Suitable children are later admitted to the school; others are placed elsewhere. In this unit the ideal of diagnosis and comprehensive assessment in a good educational setting is being fully achieved. The Katharine Elliot School in Shrewsbury, on the other hand, is a day school which accepts young children with all types of handicap. The children (and often the parents) are conveyed to school from all parts of the county; some children attend daily, some for only certain sessions each week, according to their needs. School doctors, consultant paediatricians, orthopaedic surgeons, educational psychologists and others visit the children in school to assess their needs, arrange for necessary treatment, and contribute to the diagnostic picture of a child's future requirements. Possibly because of this comprehensive early treatment and education, rather more of the children have been able to go on to ordinary schools than was once considered likely. I should perhaps mention also the Urban Aid Programme, which, among other things, permits local education authorities to provide nursery education for culturally disadvantaged children living in poor social areas.

Early detection

In the UK, therefore, we can now be virtually certain that all children with serious handicapping conditions are discovered well before the age of five. The statutory medical examinations every child receives in school provide further opportunities to ensure that no disability is overlooked, particularly if the parents attend, as they are encouraged to do, and have an opportunity of talking about their child to the school doctor or nurse. But even so, there are still children whose difficulties are revealed only when they fail to learn or develop normally; unfortunately some of them are still not brought forward for examination early enough. This is primarily a responsibility of the teacher, and we shall have to consider modifying the initial training of teachers to give them increased competence.

Let me now turn to the integration of handicapped pupils into ordinary schools. In my country it is official policy that this shall be done "wherever possible." It is clearly best that the child should grow up in his own home among his own family and friends and in the community where he will probably live and work. Some developments in our primary and secondary schools are tending to favour this arrangement. Size of classes is slowly but steadily falling, and concern with the individual rather than the class now characterises all of our best primary schools and some of the secondary. Emotional as well as intellectual needs are now more widely recognised, and the Schools Council is giving direction and encouragement to the development of programmes more in accord with the needs of pupils in later life. Perhaps of even greater significance is the growth of the social role of the school. The Plowden Report on

"Children and their Primary Schools" (HMSO 1968) drew attention to the importance of the home for children's learning, and stressed the association between parental encouragement and educational performance. Many of our special schools have long had close links with the children's homes; parents visit whenever they wish, help in the school, are visited by the teachers and even on occasions are invited to stay at a school overnight. A number of special schools have a social worker on the staff. Now that ordinary schools are beginning to develop similar links the prospects for handicapped children grow brighter. In recent years more special classes have been formed and even quite seriously handicapped children have been successfully placed in ordinary classes alongside normal children.

But "integration" must never be assumed to develop spontaneously nor must it cause the special needs of handicapped children to be overlooked. My specialist colleagues have recently investigated the progress of partially hearing children in normal classes, partially hearing children in special classes in ordinary schools, and "slow" learning children in secondary schools. The findings are not entirely reassuring. Though none of the evidence indicates that these children cannot be satisfactorily educated in ordinary schools, many of them are not prospering to the extent they should. The attainments of some of the partially hearing pupils transferred from special schools to ordinary schools (and both pupils and schools have been carefully selected) fell off dramatically; similar pupils in certain special classes did not, on account of their disability become "integrated with the wider school community at all", and many of the slow learners were following programmes poorly adapted to their requirements under teachers who had too little understanding of their special problems.

Inter-professional co-operation

Two problems difficult to solve are how to achieve the close and continuing co-operation between the various professions involved; and how to ensure adequate communication between them. A baby born with a handicap such as spina bifida will in course of time require the attention of a large number of specialists — paediatrician, family doctor, nurses, health visitors, the home help service, the medical officer of health, school doctor, educational psychologist, teachers, youth employment officer and others. To ensure adequate consultation and the communication of essential information every professional concerned must recognise that he is only one member of a team in which roles often overlap and in which others play equally important parts. Each member must be able and willing to communicate quickly and effectively with others if a co-ordinated plan of action is to be effective. Every kind of professional training ought to feature the art of inter-professional co-operation. So far our progress towards this end has been slow.

Emphasis on keeping the child in his own home and community is leading many people to look critically at boarding schools, which are often accused of divorcing a child from his family and from every day life and experience. These strictures were truer of the past than of the present, and we should not forget that there are some handicapped children who flourish only when given specialised care that a boarding school can provide. Most boarding schools realise the dangers and are fully aware of the need to maintain the closest possible ties with the child's own parents and the community at large. Home visits are more frequent than they were and weekly boarding widespread. In many schools parents visit at any time they wish.

But every child presents his own individual problem and his needs constantly vary. One of the aims of the special school must always be to prepare a child to return if possible to a less specialised form of care — from special boarding school to the day special school, from day special school to ordinary school, from ordinary school to normal community life. In many cases this will not be possible. Conversely some children in ordinary schools may well be found at one time or another to need the more specialised care available in the special school. All forms of provision must be seen as parts of a related whole in which the needs of the individual child are constantly reviewed.

There is increased understanding to-day of the needs of handicapped children. More young people than ever before seem anxious to be of service to their less fortunate fellows. In the future improved services will almost certainly prevent some primary handicap and reduce or prevent many of the secondary. But if further progress is to be achieved, then one essential will be, as the Seebohm report puts it, to "enable the greatest possible number of individuals to act reciprocally, giving and receiving service for the well being of the whole community."

Donal E. Cowing, U.S.A.

THE TRAINING OF SPECIAL EDUCATION PERSONNEL IN THE U.S.A.

It is encouraging that in the U.S.A. we have a literacy rate of almost 98% but it is discouraging that we have so many needs still to meet — especially in the area of training our handicapped.

The Federal Government's role in education is to stimulate and help support certain programs such as the following:

1. *Research.* The Division of Research of the Bureau of Education for the Handicapped is now the major source of support for research in the field of Education.

2. *School lunch programs.* The Federal Government subsidises school lunch programs to encourage adequate nutrition for all school children.

3. *Special Education Grants.* In 1968, over 13,000 persons attended university programs, receiving U.S. Office of Education grants to train for work in Special Education.

The policies and standards for education are established at the state level because each state has different economic resources, varying geographic and demographic problems and their needs differ greatly[1]. Areas or standards set by the states include teacher certification (licensing), minimum curriculum (subject) requirements, school building safety standards and, most importantly to us, standards of education for handicapped children. Here at the state level are established the *minimum* acceptable training standards for the special teacher, the number of children allowable in a class for the handicapped and the physical standards for the school room. While there is much variation nationally, the states contribute about forty per cent. of the local school expenditures.

An example of what *can* happen under this system is illustrated by the following study of certification requirements for teachers of emotionally disturbed children. In five states, certification was possible on the basis of general special education certification only. Twenty-two states required elementary and secondary education teaching preparation in addition to related special education courses. Seven states required no additional training beyond preparation to teach at the elementary or secondary school levels. Two states required no additional training beyond preparation to teach at the elementary level. Eight states required no teacher preparation in order to teach emotionally disturbed children.[2] As is evident, programs for the emotionally disturbed are in their infancy.

Within the framework of the minimum standards set at the State Department of Education, the local municipality controls its educational program through a school board of usually five or seven people elected to set local educational policy and administer education in their community. This local control results in vast differences in educational programs, depending upon the ideas and values of the local Board of Education and economic resources at their disposal. One result of this is a wide variety of pay scales for teachers.

To encourage the development of services for the handicapped, virtually every state offers special *additional* subsidies for the local school districts to operate special education programs to serve the mentally and physically handicapped.

Thus, we have the Federal Government establishing minimum standards of training for Special Education personnel *in those universities receiving training grants;* we have the individual states setting teacher certification (licensing) standards for their state. There are, in addition, many *other* influences on teacher training for the regular teacher and even more for special education teachers.

While the state sets the minimum standards of training for certification, virtually all 1,198 colleges and universities engaged in teacher education in 1967 had training standards significantly *higher* than the state set minimums.[3]

The American Association of Colleges for Teacher Education is working toward the development of universal standards for the training of teacher personnel. For 1964, teacher education programs, which produced 74% of the supply of new teachers, were accredited by this association. Thus far, the A.A.C.T.E. has effected reciprocity between thirty of the fifty states for teacher certification. While primarily advisory in nature (and its standards voluntarily subscribed to), it has had great impact in the development of standards for institutions involved in teacher education.[4]

The National Association of State Directors of Teacher Education and Certification[5] also aims at promoting a greater degree of uniformity and establishing reciprocity among the states.

A very real influence in teacher education is that the teachers' salaries are based on two factors — training and experience. As the teacher completes additional university training beyond the baccalaureate degree (either in summer or evening school) his pay is increased.

The Council for Exceptional Children, an interdisciplinary professional organization for those working with the handicapped, *recommends* standards in all areas of the handicapped.[6] Other professional organisations, such as the American Speech and Hearing Association, are concerned with a specific type of handicap and have their own (voluntary) organizational standards.

In the United States it is considered more prestigious to teach exceptional children than to teach the non-exceptional. Teachers of the blind, deaf, gifted, emotionally disturbed, and severely mentally retarded possess an especially high standing.[7]

Teacher Education Programs are centered in essentially three different types of institutions: liberal arts colleges, universities, and teachers' colleges.[8]

The liberal arts colleges stress a broad knowledge and understanding of the world, and place less emphasis on professional teacher education areas.

University programs tend to spend more time on professional teacher training than the liberal arts colleges, but still significantly less than the third group, the teachers' colleges.

The teachers' colleges stress professional teacher training.

In Special Education the extremes of position are those which recommend four or five years training for a specialist in a particular area while at the opposite end are those who would stress interdisciplinary aspects of education, psychology, child development, with less emphasis on training for teaching those with a particular disability.

While presently the four year baccalaureate degree program is the standard for teachers, there are many pressures to escalate to five year programs.

In 1964, the state of California required five years of preparation for beginning elementary teachers, the fifth year being completed within the first five years of employment. Forty-five states required the bachelor's degree; five states required more than two but less than three years of college work; and one state required less than two years. Nine states mandated the completion of a fifth year for secondary school teachers, thus indicating a trend in requirements which in time will probably be expected also of elementary teachers.[9]

If one were asked to outline a typical Special Education training program it would be as follows:

First year — *General Education.* English, History, Biological Science, Sociology, General Psychology, Health/Hygiene, Philosophy.

Second year — *General Professional Education.* Educational Psychology, Philosophical Foundations of Education, Educational Sociology, Child Growth and Development.

Third year — *General Special Education.* Introduction to Special Education, Counseling, Methods of Teaching Subject Matter, some direct work with the handicapped, Psychology of the Handicapped.

Fourth year — *Specialized Special Education.* The nature and needs of a particular area (for example, the blind, the deaf, or the mentally retarded), instructional methodologies unique to the particular group, and student teaching.

While student teaching requirements vary, universally this is considered the culminating experience in the teacher training sequence; usually 150 to 200 clock hours are spent in the classroom situation under the supervision of a fully qualified "master teacher," and the entire experience monitored by a University professor. The shortage of qualified and effective teachers sometimes makes it difficult to find enough good practice teaching situations necessary for teacher training.

Teachers often begin teaching the handicapped with sub-standard credentials, completing the requirements for the certificate through evening or summer classes.

Master's degree level Graduate Education in Special Education is offered on both a full or part-time basis at most universities with Special Education training programs. In a Master's program, one may find teachers certified to teach normal children who wish to teach the handicapped or those fully trained to teach an area of the handicapped wishing to increase their expertise.

A major impediment in the development of programs has been the shortage of Doctoral level personnel in Special Education. This results in a serious shortage of personnel qualified to teach at the college/university level.

There is much ferment in Special Education and a clear movement in the direction of a breakdown of the traditional categories of handicaps.[10] The paradox of current medical science is that medical advancements tend to prolong imperfect life resulting in an increasing incidence of the multiply handicapped. In New Jersey, for instance, one survey established that in three of four children identified as being handicapped, there was a second handicap (and sometimes a third) of sufficient significance as to affect educational programming. An optimum program for these children usually requires a high level of knowledge in several areas of specialization.

Much controversy ensues regarding the value of our traditional approaches to education of the handicapped. G. Orville Johnson summarizes a body of research when he writes, "Despite more money and specially trained teachers, the mildly retarded don't achieve as well in Special rooms as in regular class placement."[11] Another study states: "There is little or no evidence that special class programming is generally beneficial to emotionally disturbed children as a specific method of intervention and correction."[12]

To continue to research education for the handicapped and make appropriate changes will require highly trained and skilled teachers. These teachers will be trained in the interdisciplinary aspects of special education, most likely in programs of a minimum of five years in length.

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Angelina Boric, Yugoslavia

UNIVERSITY TRAINING OF PERSONNEL FOR SPECIAL EDUCATION IN YUGOSLAVIA

The Faculty for Special Education, University of Zagreb, has developed a program of multidisciplinary training of personnel for different schools, clinics, diagnostic and social services as well as for research work.

This paper presents the philosophy, organisation and program of training as well as the role of the students in self-management of this institution.

The establishment of the Faculty for Special Education in 1962 provided for the first time in Yugoslavia the opportunity for the education of personnel at a university level. Previously the study of special education was carried out in the department for special education in the Teachers' Training College (Pedagogical Academy) in Zagreb 1947-1962. The course of study lasted two years. The aim of the training was the education of teachers for work in special schools.

Although only a relatively short time in existence, the Faculty has had to cope with organizational, personnel and financial difficulties. Despite not having a long tradition, however, it has succeeded in establishing a firm position for itself within the University of Zagreb. The plan of studies, as well as the administrative management of the institution, are in accordance with the requirements of the University Statutes and conform to the intentions of University reform.

The goals of the Faculty for Special Education are threefold: the training of professional personnel, research work and research training.

The primary focus is on educational training and research work. The new programs (1968/69) are based on the principle that effective study is best conducted by active participation in research work. Other principles that have motivated us in forming the program of study are:

—provide for the students a broad approach to the problems of special education and rehabilitation;

—enable the student to make a choice of speciality;

—integrate related professional fields;

—reduce the number of lectures and increase the amount of seminars, training and laboratory work;

—in this connection qualify the student for independent work and a creative attitude towards study;

—acquaint the students with scientific research methodology;

—make it possible for the student to have wide contacts with professional practice at home and abroad.

The course of study lasts four years (eight semesters). So far 251 students have graduated.

The study is organized in two parallel courses. The first covers mental retardation, emotional disturbances, juvenile delinquency and the physically handicapped. The second course treats the problems of the deaf and hard of hearing, speech disorders and the blind and partially sighted.

Students of the first course also attend lectures in the field of speech disorders, and those of the second course attend lectures in the field of mental retardation.

Special Training

As is evident from the organizational scheme, the Faculty for Special Education provides special training for students working with juvenile delinquents. This is the first time in our country that the work of the educator in approved schools, remand centres and similar institutions for juvenile delinquents is performed by university educated personnel.

Students enroll in each course according to their interest in and affinity for the profession. They independently decide which speciality within each course they are going to graduate in.

A comprehensive multidisciplinary approach has been emphasized in the program which also offers the student an opportunity for good professional practice and creative work.

The multidisciplinary approach makes it possible to throw light upon the problems from different aspects: bio-medical, psycho-educational and socio-legal. After graduation the student may show special interest in some of these aspects and may orient himself, for instance, towards the study of genetics in mental retardation, the social welfare of the handicapped, or vocational rehabilitation. Besides, the students acquire an elementary knowledge of cybernetics, learn how to manipulate apparatus utilized in diagnostic centres and in special schools and acquire various techniques of manual training applied in school workshops.

The special feature of study at the Faculty consists not only in its broad basis and complex approach to problems, but also in a broad conception of the future profession. Upon graduation the students will be able to specialise in different fields and in this connection will be capable of being employed, for instance, as clinical specialists in hospitals, in industry as advisers for vocational rehabilitation of handicapped persons, in diagnostic centers, pre-school institutions, sheltered workshops as well as as educators in approved schools.

Postgraduate study will be organized by the University as in all other faculties.

Upon graduation the students acquire the title of professor defectologist.

Students enroll in the Faculty for Special Education on the basis of a competitive examination advertised in the daily press.

Candidates wishing to study at the Faculty, besides having a required grammar school or some other further education (teachers' training college or an approved medical school), are obliged to sit a qualifying entrance examination which consists of:

1. An examination in biology, sociology and psychology by means of knowledge tests;
2. An assessment of abilities and personality traits necessary for the study and future practice. This is done by means of personality tests and intelligence tests (Cornell Index and M-series);
3. The examination also takes into account the annual marks gained in all four forms of a required secondary school.

Selection is rigorous. For instance, of 200 students who applied for the qualifying examination in 1968/69, only 80 students were allowed to enroll.

In the first year of study all the students attend lectures in general subjects and general professional subjects such as General Education, Sociology, Statistics, Fundamentals of Neurology.

Choice of a special course of study is made in the second year.

Participation of students in self-management of the Faculty is obligatory as in all the other Faculties in Yugoslavia. The students are obliged to send delegates to the Council of the teaching staff (4), the Faculty Council (4), the Managing Council (2). They discuss together with the professors and the assistants all the questions relevant to the program, organization and concept of studies. Within the University our students participate in all cultural, social and political activities together and equally with the students of other Faculties.

Characteristic of our course of study is the one-month practice of independent work which is compulsory for students in the fourth year. Practical work is organized both at home and abroad. So far the students have got job experience in the following countries: Denmark (twice), England, Austria and Italy. Besides compulsory practical work of one month's duration during which the students should demonstrate their independence and the application of acquired knowledge, the students get practical experience for from 6-10 hours a week in the sixth semester in appropriate institutions.

Occasionally professional excursions are organized. So far the students have visited special schools and institutions in Bulgaria, Austria, Hungary, Czechoslovakia, Italy, East Germany and the USSR.

Part-time study has been organized for those persons who actually work in the field of special education but do not possess the required professional qualification for their job. The program of study and other requirements are the same as for the full-time students, but the organization of studies is specific. Part-time students attend courses during the winter and summer semester holidays (i.e. January 15th to February 15th, and June 15th to July 15th).

Students must have a knowledge of at least one foreign language (English, Russian, French, German) in order to study professional literature.

For the last two years research work has been developing more intensively. At present three research projects are being carried out: (1) "Some factors determining the success of mentally retarded persons in industry"; (2) "Education in special schools related to employability of the mentally retarded pupils in industry"; (3) "Investigation of factors that influence the social and psychological integration of the blind in the normal environment." These projects are under the auspices of Division of International Activities, Department of Health, Education and Welfare, Washington D.C., U.S.A.

Professors of this Faculty are also individually concerned with the treatment of problems in the field of special education and rehabilitation e.g. speech disorders in elementary school pupils.

The Faculty co-operates closely with various experts and institutions in the West and the East. It publishes its own periodical "Defektologija", text-books for students and other publications of professional interest. It also organizes symposiums and congresses of national importance.

In our country, and probably in this part of Europe, our Faculty is unique as an independent institution at university level.

Frances P. Connor, U.S.A.

EARLY EDUCATION FOR HOMEBOUND AND HOSPITALIZED CHILDREN

We need to make a concerted effort to provide systematically designed educational intervention for very young children who must remain at home or in hospitals because of crippling or other health problems. These are the children with asthma, congenital cardiac conditions, nephrosis, cerebral palsy, hemophilia, epilepsy, club feet, congenital amputations or deformities, burns, fractures, spina bifida and the like.

Clearly, these conditions, while in most instances having little direct effect on the innate intelligence of the child, are often grossly physically inhibiting, socially thwarting and restrictive of usual childhood experiences. Also, disabled children are likely to be multiply handicapped. For example, Wishik (1958) in a comprehensive interdisciplinary study of handicapped children in two counties in Georgia concluded that the average handicapped child had 2.2 handicaps; one-third had three handicaps and two-thirds evidenced two handicaps. The implications for Teacher education in programs limited to specialization in one of the hardened "handicapped" categories and separatist programs are implicit here. The medical label attached to the child, or to the program, is not a discrete entity. It has limited educational relevance.

The child in the hospital or confined to his home is there because of illness. However, his learning problems stem from impairment in the intellectual, sensori-motor and/or affective domains of abilities. A defect in one area usually ignites handicaps in other areas.

For effective special education, the three domains of human development should be incorporated into the teaching situation to foster freedom for growth, especially while the child is in the hospital. Among the *intellectual* processes to be spotlighted are cognition, perception, memory, divergent production, convergent production and evaluation (Guilford (1967)).

The pertinent sensori-motor factors include precision, co-ordination, control, vocalization, speed, strength. Steps in the *affective* domain suggested by Erikson's work (1950) include trust, autonomy, initiative, duty, accomplishment and identity.

Maritain (1957) describes the function of education as liberation. Such liberation of the disabled child permits him to move about, to explore, to receive impressions, to respond and to express. Teachers' efforts, therefore, need direction toward the *child's sequential development* and emphasis needs to be on specific *elements of instruction,* some of which differ from those of the general educator.

Whether we deal with the highest or lowest functioning handicapped child, the educators' responsibility rests in *instruction* which includes the *selection of* (1) *the content to be learned,* (2) *the materials through which the child can best learn the content and* (3) *the instructional methodology to be applied.*

The desirability of pre-school education has gained increasing attention throughout the world. Yet, seldom is an organized educational program provided for the young child confined to his home or for the child in the usual hospital setting. In general, home instruction for this group is initiated at school age, if at all, and in too many situations education in hospitals is left to volunteers, group workers or other available personnel, without the direct supervision or direction of a knowledgeable educator. If these educationally high-risk boys and girls are to have the educational start they need, community schools and other governmental educational agencies must assume fiscal and professional responsibility for their early education.

Though empirical evidence of the efficacy of educational programs for preschool homebound and hospitalized children is not available, we may hypothesize (1) that early physical discomfort and physical restraints such as casts, braces, traction straps or extended bed-rest interfere with the over-all development of the child; (2) that disturbances in the normal mother-child relationship created by the child's illness or abnormality are negative influences on his development; and (3) that educators through the early education of these children can positively influence their development.

The recent appearance of Jansen's article on genetic bases for intellectual inferiority has rekindled heated discussion of the nature-nurture issue. The present paper is based on the notion that environmental intervention will make a noticeable difference to a child's functioning. Bloom (1964) analyzed hundreds of longitutional studies of human growth and concluded that half (50%) of all growth in human intelligence takes place between birth and four years of age. Another 30% occurs between ages 4 and 8 years and the remaining 20% appears between 8 and 17. In other words, according to Bloom, more than one half of the child's growth takes place before he arrives at school.

Jenson (1969), highlighting genetic factors, indicated that the only supportable upward shifts in IQ associated with environmental factors were related to "young children whose initial social environment was deplorable to a greater extent than can be found among any children who interact with other people or are able to run about out of doors". For these children he suggests that a shift to good average environmental circumstances can boost the IQ 20 to 30 points and in extremely rare cases as much as 60 to 70 points. Does this not seem to refer to the children confined to their beds or to a chair in a hospital institution for the retarded or emotionally disturbed or at home, and to children whose parents might be intensely upset, disappointed or guilt-ridden that their social relationships with the child are distorted?

Most experts agree with Piaget that an organism needs information in order to adapt and develop. This information can be considered in terms of:

(a) the quantity of information available at any one time,
(b) its quality, i.e. content or meaning, and
(c) the context in which it appears.

(a) Problems result from both too little and too much stimulation. Well known are the studies of chronic deprivation, of institutionalization's universal effect in reducing the child's interest in stimulation and in his adaptation. Provence and Lipton (1962) and many others observed that institutionalization resulted in great distress for the young child and if prolonged, without an attentive caretaker and sensory stimulation, the child usually becomes apathetic and loses, at least temporarily, his normal capacity for affective expressions. Nor can pre-school be a program simply stated in terms of a rich, multi-sensory stimulating environment. As Cronbach (1969) states, the highly stimulating environment usually considered as "rich" promotes optimal growth for some persons and may not be at all suitable for others. He acknowledges the deprivation of an infant who has nothing to gaze upon but a blank ceiling, but suggests that probably nothing is gained by making the environment so richly patterned that he cannot direct his attention.

The pattern that holds a child's attention of course varies with age and experience (Frantz (1961)). The appropriate amount of redundancy and detail of an information-laden environment depends upon the learner's maturity. Wicklegren and Cohen (1962) observed that too much information can actually create an overload which impairs learning. Somehow we must find ways of determining optimal amounts of stimulation, physical assistance and environmental modification, external monitoring and reinforcement, pressure for excellence and accomplishment, conceptual v. concrete activity, etc. for each individual child in his own situation with recognition of deficits and strengths.

Cronbach (1969) while supporting early childhood programs suggested altering the environment to provide:

(1) optimal maintainance environment, i.e. one which promotes nourishment and growth potential, and

(2) intervention periods to supply needed skills, alter habits and overcome physical impediments.

Decisions regarding short and long term objectives for the individual child will determine the degree and kind of intervention. For some homebound and hospitalized children we recognize the probability of no adulthood at all, for others a very sheltered life, for still others a mixture of anonymity and conspicuousness, and for others, outstanding leadership in a competitive, highly technical world. We are indeed concerned about the question of "Intelligence and Education for What?" We are concerned also that each child have the opportunity for exposure to information resources in forms useful to him.

(b) The second factor, the *quality* of the information input for homebound and hospitalized children might well be unique in the presence of forced reduction in sensory-motor experiences.

Stechler and Carpenter (1969) observed that infants literally seek stimuli; they organize themselves around the stimuli, they have ability to process the information, within limits, and they regulate their bodies' adaptive mechanisms in relation to that information. These researchers suggest the need to recognize *dual* avenues of early information processing.

Thus, in addition to the sensory-motor of Piaget (1947), Skinner and others, they propose a *sensory-affective* intelligence. It should be noted that Piaget referred to the intellectual and affective lives as inseparable in emphasizing that "all interaction with the environment involves both a structuring and a valuation". He also indicated that human beings could not reason without feeling and that they could not feel without some understanding or discrimination. Indeed his notion that adaptive interaction between the child and his environment involves the complimentary processes of continual adaptive accommodations and assimilations suggests both affect and motivation.

I feel strongly with Stechler and Carpenter that in working with children with limited physical experiences, there is need to give special attention to the question "what do I feel about what I see and know?" as well as to "what do I do about what I see and know?". With maturation, these two become better articulated and differentiated. We need think only of what must happen to the young child when his variety of perceptions grossly exceeds his repertoire of action. With the expected high motivation in his seeking stimulation, he will probably attempt to extend his repertoire. But in a hospital or when confined to bed at home, most of his attempts will be thwarted or interrupted. As he fails, he responds as an emotional being.

A number of physically disabled young children have little control over the actual environment and they encounter early affective-excitatory-expressive functions through *personal* communication of whatever sort possible. If the communication is effective, it will result in feedback received through the *sensory-affective* system. Then, the child's responses function to alter further informational intake either through sensory approaches or through his withdrawal. Hopefully, his response is communicated, in context, to an adult. So it would appear that the child can and does alter his sensory input.

We surely need to learn more about the factors which enable high verbal and academic function of a few individuals without use of limbs who have been confined to severely deprived environments. Such study would shed light on avenues of input to be employed in pre-school and later educational programs, as well as on the child's processing of information and the means by which the affective states and their expressive concomitants can become articulated.

The extent to which a child needs support upon experiencing discrepancies between his perceptions and his ability to act can be judged only by careful and systematic observations. Educators can offer systematic evaluation of the very young child's sensory, affective and intellectual functioning including his receptive and expressive modes. As we study the impact of adults' feedback to the child and the positive and negative interactions, we, as professional educators, should indeed be able to advance the child's development in ways as yet not understood

The affective forces appear particularly important upon consideration of the emotional reactions of children to hospitalization. The earlier work of Spitz (1955), Goldfarb (1947) and Pinneau (1955) stressed the fact that the most favourable conditions of food, shelter, medical care, schooling and social life were not in themselves sufficient for adequate physical and emotional development. It was the lack of stimulation from love and attention that really made the difference and, the younger the child, the longer in duration and the greater the maladjustment appeared to be.

Other significant studies for teachers of young hospitalized children are those of Bowlby and Robertson (1952) on separation from parents. Robertson has produced films which depict the three phases of a child's reaction to hospitalization. First, protest; secondly, despair; and thirdly, denial. During phase three, Robertson notes a superficial interest in surroundings and appearance of stability and sociability. He believes that the result of long hospitalization is an extended period of serious emotional maladjustment.

Prug et alii (1954) noted that children under three years of age were most susceptible to separation anxiety. The higher the adaptive capacity of the child, the better his adjustment to the hospital. Unfortunately, over 75% of hospitalized children studied by Gofman, Buckman and Schade (1957) were not prepared for their illness though even three-year-olds can understand something of their treatment and illness. The World Health Organization meeting (1954) expressed deep concern for the average young child's final and irrevocable breaks in family relationships upon hospitalization.

Practitioners including Illingworth (1967) have reported that only a small majority of hospitalized children showed lasting ill effects. He too, however, expressed deep concern about the young child's grief when his parents leave.

In 1962 Plank produced a guide for the professional team working with children in the hospital. Particularly helpful are her practical suggestions for working with the child through his first days and early adjustment, his preparation for surgery, through the impact of death of a ward mate, in his playing and in his learning. Bergman and Anna Freud (1965) provide informative case study material on children with a variety of medical and adjustment problems. For Bergman the technique of "Mental First Aid" seems to be the underlying base. To her, the difference between the effect of severe and minor or chronic and acute illnesses is one of degree not quality and they all concern external physical realities rather than internal psychotic realities. Any length of confinement, especially a long one, is worrisome to a child.

With the results of empirical study, concentrated observation and awareness of child behaviour, the teacher has an important role to play in the education and up-bringing of home-bound and hospitalized young children. In view of the importance of parents and other caretakers, we must include them more systematically in the instruction process designed for their children. The quality of information input will be greatly enhanced as teachers accept a new role of instructing these other adults in ways of promoting their child's sensory-motor and sensory-affective development, not only through maintenance and nourishment but through specially designed environmental modification as indicated.

(c) The teacher working with homebound or hospitalized children has a magnificant opportunity to substantiate the belief that education is liberation—that it *is action* and *leads to action*. It is this *context* in which the early education program is placed.

I would like to use as a frame of reference the following 9 elements of special education, as they seem appropriate to teaching hospitalized or homebound children. The adjectives are: enriching, developmental, evaluative, preventive, remedial, experimental, preparatory, individualized and mobile.

(1) First, consider the notion of special education as enriching. Dewey in 1902 spoke of the child not developing entirely within himself — that *his* development requires a *development of experience* and a *development into experience* of that which was really wanted. It follows that school programs, particularly for young children, should be directed toward the child's action. Yes, the adult selects the stimuli and the direction for learning. However, the *most fertile* educational material the educator possesses is the *pupil's own action*.

Other educational materials include (1) persons, (2) time, (3) space and (4) tangible school materials. The first category includes the teacher and other *persons* with whom the children come in contact. Children's experience with people can progress from carefully planned encounters with prearranged roles to spontaneous associations with neighbours, community workers, hospital staff and visitors. Parents have a basic role in this curriculum implementation. Research in New York City's Mobilization for Youth Program indicates that non-professional aides, including parents, can be taught to perform *specific* instructional tasks effectively. The results were positive for both the child and the teacher aide.

Time for pupil-teacher interaction is governed by teacher schedules, treatments, and other professional services. However inflexible the external limits may be, the schedule within the teaching periods is elastic. Expansion and contraction of activity periods depend upon the teachers' immediate objectives, the type of activities introduced and the children's responses. We have no right to waste children's time or assume that one, two or even five hours weekly is adequate for the homebound or hospitalized child. Parents, volunteers, college students and community workers can very effectively extend our instructional time.

Space is not the physical setting per se, but rather, its *use* in accommodating experiences and its *modification* in terms of furniture arranging and highlighting to establish consistency and attention in the child's action.

Tangible materials are selected to stimulate thought and/or activity. They include or may be adaptations of usual pre-school materials. Teacher-made materials are useful in filling gaps when commercial items are not available and they also enable the teachers to direct, control and maintain attention to a designated stimulus so as to effect a desirable response. By selection and distribution of color and texture, arrangement of elements and contrivances of moving parts, children can see the relationship of parts to wholes and extraneous detail is eliminated. Thus, children are permitted to interpret on the base of their experience and to increase their involvement in the functioning of the material in their activity. Parents and other aides can use such materials as prescribed by the teacher.

For handicapped young children, particularly passive ones, the materials or activities selected by the teacher need to:

(*1*) be *attractive* to the child i.e. attract his attention,
(*2*) promote a *child's action* which, if desired
(*3*) must be immediately *reinforced* by the teacher.

Quite clear, according to Piaget, is the need to introduce stimuli not by an isolated process of increasing the number of facts but rather, by a provision of new information to lead to new discoveries for the child, to be differentiated by him, to be reassembled, be reorganized and then to be integrated for more effective patterns of behaviour readiness for other cues or teacher-selected materials.

Thus, if as Riesin, Watson and others have indicated, there are specific stages in individual development during which certain capacities for behaviour appear — and, if they do not appear at that time, they may never — the long-term hospitalized or homebound children require planned action to promote, for example, visual perception or intersensory perception as the base for learning of symbols and abstractions.

The manner in which these capacities are then utilized sets a pattern for later behaviour which is highly resistant to change.

(2) A second element of special education is that it is *developmental.* The teacher is *free* to start at the child's level of comfortable function and satisfaction, recognizing the next step, however small, and assuring movement toward short-and long-range goals.

(3) Special education is *evaluative* (or diagnostic). While a child is hospitalized, or homebound, the teacher, working with one child or with a small group of children — and with a comprehensive team of supporting professional workers — has opportunity to seek out impediments to learning. Educational evaluation calls for systematic observation and recording of behaviour in selected school tasks. The teacher in either of these two settings has a unique opportunity to develop profiles of function (assets and liabilities) with specific recommendations for program planning to follow the child as he moves into school or from one school setting to another.

(4) Special education is *preventive,* emphasizing the deletion of failure, boredom and time-wasting which leads to inactivity, malfunction and secondary handicaps. The more opportunity children have for applying workable behavior structures in a variety of selected situations, the more easily will emerge the ability to modify one's own action — and to cope with one's environment.

The preventive function of special education requires consistency in response to behavior to be reinforced; with focus on successful action; with the teacher's and the child's attention to it. Unfortunately, too much attention is directed against the unacceptable.

The teacher is alert to the danger that children *learn not to learn* in a passive or artificial environment, devoid of the structuring necessary for selection of stimuli to guarantee successful response. Without clear-cut learning tasks and structure as with the overly "rich" environment, teachers may be reinforcing children's confusion and learning problems.

(5) Special education is *remedial.* The hospital setting permits flexibility for correcting some barriers to learning — furniture can be shifted; programs are not so rigidly graded; books and other materials can be individualized; schedule times can be altered. Why limit schooling to 9-3 p.m.?

(6) Special education is *experimental,* offering opportunity for applying research findings to one child or to small groups and selected populations, testing educational hypotheses and cutting new pathways.

(7) Special education is *preparatory,* for varying degrees of satisfying and/or independent living. Not to be overlooked is the frequent need for preparing the community for the crippled or otherwise health-impaired child's movement into or return to the community. For some children, of course, we must prepare for special residential settings or devise, where necessary, the contrived life environment in which the child can function.

(8) Special education is highly *individualized.* Reference is made constantly to the child's diagnosis, functioning and prognosis for selection of school content, for guidance and for programming.

(9) Special education is *mobile* and continuous, providing for the child wherever he may reside, whether on a temporary or permanent basis. It recognizes a need for a laision teacher or educational guidance specialist to assure continuity of education as he moves from home instruction to a hospital school, to a special school and/or to a regular school program.

The film on *Parent Education in Heidelberg* represents one effort on behalf of deaf children. The complexities are evident and the implications broad.

In conclusion I would like to suggest that we try to be aware of who the child is, the amount and kind of input (visual, auditory, tactile, kinesthetic, etc.) he experiences and of which he is capable, and how he feels about himself, how he communicates and what we want him to learn. Rosenberg (1969) suggests we examine the child's learning styles (rigid-inhibited, undisciplined, accepting-anxious, creative) as well as his learning skills (attention, motor, visual receptive, auditory receptive, conceptual and automatic).

It might be fruitful to analyse the *usual* very early developmental activities of so-called average infants and young children in terms of task analysis and sequence of handling materials and behaviour in order to provide specific guidelines for work with youngsters whose environments are physically restricted.

We can (1) formulate diagnostic hypotheses to assess learning strengths and weaknesses, (2) present the child with specific tasks to investigate the postulated learning strengths and weaknesses, (3) modify test situations and assess specific behavioral situations, (4) present material on educational status with recommendations to an interdisciplinary team and receive their recommendations, (5) set up a specific instructional program with selected materials to provide the desired stimulation and to promote the desired behavior, (6) communicate the academic achievement and tentative educational prognosis to the child's parents, and (7) help the parent(s) and other instructional aides to carry out instructional activities at home and even on hospital visits.

It is this last step that seems to ensure best the child's continuing and long-term progress while confined to his home and upon entering school with other children. Homebound or hospitalized children suffer the effects of (1) separation or institutionalization and/or (2) a deprived family life. Who then are the key persons? Are they not the parents and caretakers? The notion of serious parent involvement and participation on the basis of knowledge is tenable and consistent with our new young world.

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EDUCATING CHILDREN WITH FUNCTIONAL HANDICAPS

In my country we are beginning to believe that much more attention should be given to early diagnosis and evaluation of children and that their total environments should also be taken into consideration in labelling them for placement in school. Some of the children hitherto labelled "educable mentally retarded" may not have irreversible handicaps but are rather the victims of their environments and cultural differences.

Recently I met the supervisor of classes for mentally retarded in San Francisco Public Schools. In her office are a half-century of records on pupils classified as "educable mentally retarded." She believed many of these children were not *truly* retarded. To illustrate her point, she indicated that the earliest records were high in Italian names. Italians were then San Francisco's most recent immigrants and were mostly engaged in manual labor. Later there was a period with a predominance of Chinese names and now she notices a high prevalence of Negro and Mexican children. These statistics highlight the educational implications of mass immigrations and " in-migrations " as well as economic deprivation. While undoubtedly many of these San Francisco pupils were really low in capacity and profited by the restricted program of special education, others might have benefitted more by the variety of opportunities in general education.

Observations Reinforced

These observations are further reinforced by the following remarks of the former Director of Special Education in Alaska: "There are language deficiencies and cultural differences among Alaskan children which exist in many of the rural areas with those from non-English speaking homes, such as Indians and Eskimos. Many of these children because of this deficiency will eventually be labelled *mentally retarded* and frequently even *emotionally disturbed*. The whole of which could have been prevented had the youngsters been prepared to enter the white man's domain and compete with the white man's standards at age of six years when they first enter school."

This point of view cannot be shrugged aside as related to a problem only in Alaska but is true in varying degrees in all the United States.

You who work with the physically handicapped are fully sensitized to the danger of misjudging the ability (understanding) of children with poor vision, poor hearing, etc. Perhaps we are not always so careful with other children especially with those who are mentally retarded, emotionally disturbed, or have multiple handicaps. Too often we place a child educationally on the basis of what his intelligence quotient suggests.

In the United States we have been forced to re-examine the problem by the passage of several Federal laws — such as the Economic Opportunity Act (1964), and the Elementary and Secondary Education Act of 1965. While all parts of the latter Act (PL 90.10) were designed to aid children of *low income families*, Title One authorized more than one billion dollars which (under certain circumstances) may be spent by local public schools in the home communities.

In administering the law, it has become evident to us in the Office of Education that many culturally, educationally deprived children may be the *same* children as those who are labelled handicapped. Directors of special education in a number of cities have reported a higher than usual percentage of special education pupils in the areas where low-income families are concentrated. As many as 80% of the children in certain low income areas of Chicago were already classified as handicapped by mental retardation, emotional disturbances or physical deficiencies.

A major question for school administrators to determine in the future will be which of these children can be brought to a satisfactory level of development through some aspect of general education in such programs as compensatory education and which ones — even after all services have been used — still require some form of special education for the handicapped. At present, it is not possible to make a clear differentiation between the functional and the capacity handicaps. This must be done soon as injustice is being done to some children. Would it not be better if we searched for the *reasons* both at home, in the community and schools, before labelling a child mentally retarded, emotionally disturbed, etc.? Perhaps this can be illustrated with an example.

A boy named Joey

In the City of New York there is a little boy named Joey who is just entering first grade this month. He lives in Harlem, a ghetto district, and when I first saw him he was in a public school kindergarten in his own neighbourhood.

On standardized tests he scored as if he was mentally retarded. He would have borne that label throughout his school life had it not been for his teacher, Miss Bee, a woman who wonders about each child in her class, with an eye to fostering the individual development of each one. Joey came in for his share of her affectionate scrutiny.

Also her classroom was more than ordinarily stimulating. She, herself, was a musician and she had joined her kindergarten curriculum with that of the teacher next door who was an artist in addition to being a qualified kindergarten teacher. The rooms were thrown together and with two student teachers about 40 children benefitted.

At once Miss Bee observed a few important characteristics in Joey. He came to school fairly neat and clean (which was an asset). But in a group, even in a small group of 4 or 5 children, he could not follow a routine. He could not even get back to his seat on time. This behaviour was a serious deficit because neither in school nor on a job would he be able to succeed unless he could follow routines. Miss Bee wondered whether he had a neurological defect which could be corrected or whether his behaviour was due to his habits of living. So she decided this would be PROBLEM NO. ONE which she would undertake with the help of the health authorities to study and correct.

Another characteristic she had observed was his speech. Like so many Negro children, he had a language all his own. For example, for the word "ask" he would simply say "ak." His diction was so different that many of the children did not understand him. Even his teacher, who understood many speech idiosyncracies, did not always understand him. So Joey's communication difficulty was Joey's PROBLEM NO. TWO.

Miss Bee wisely decided to ignore all Joey's other difficulties so that he would not feel he was frequently nagged. It was of utmost importance that he, like all her other pupils, should be as happy as possible. His schooling must provide him with a *sense of his own worth*. Even before Joey's school plan was finalized a program of Parent Participation and Parent Education was established.

Soon after school opened, Miss Bee called to see Joey's young mother whom she found to be pleasant but overwhelmed by life in the City. She seemed to love and care about her children but was unable to organize regular meals, sleeping, etc. Her education was not above the third grade level. There were no children's books and few toys. She was happy to have a visit from Miss Bee and was willing to have conferences and agreed to participate in certain parent-school-community activities.

New Clues

The home visit furnished some new clues about Joey's life and what might be expected of him. His mother appeared to be the only parent he could rely on. She and the other child had the same dialect as Joey. They lived on welfare support in one room and shared a kitchen and bath with several other families. This made it difficult to plan for meals and sleeping. Joey's mother said the welfare case worker had already suggested the necessity for proper food and urged her to attend nutrition classes.

Joey knew that a man occasionally came to see his mother. Sometime he gave them food and money but Joey felt that he did not care so much for him as for his younger brother. Joey's background clearly is one of educational deprivation, typical of many ghetto children.

Miss Bee was successful. Joey advanced so much during his year in kindergarten that he was no longer believed to be a truly mentally retarded child. His problem was functional and reversible and not one of limited capacity. At the end of the kindergarten course he tested within the normal range of intelligence. He has now entered an ordinary first grade class. This early discovery of his ability is important for he will continue in the main stream of education, where many and varied possibilities will be open to him. He will not be restricted to the special curriculum of the retarded person.

Joey's story illustrates the importance of exceedingly careful analysis of a child's learning capacity in order to make sure that his plan for schooling remains wide open to all opportunities he can accept.

Joey's story is that of the child of poverty and ignorance. Now a story about another type of child whose problem is cultural difference or deprivation. A year or so ago, I visited a public school in a Mexican-American district of Los Angeles. It was situated in a neat, upper-middle-class community of Spanish Americans. The families were doing well but they spoke no English at home. On the basis of objective individual tests about 100 children were enrolled in classes for mentally retarded housed within this public elementary school. The principal was a fine man of their own background who placed them in special homerooms, but arranged so that large amounts of their time were spent in regular class activities. The director of the school encouraged a curriculum for all pupils which was strong in communication, language development, reading, fine arts and music. It was a joyous school. There were many activities which offered leadership activities for pupils.

At the end of the past school year, about 20 of the mentally retarded children tested high enough to be removed from special classes for the mentally retarded and returned to the general school population. It was evident that these children had been handicapped by a *cultural* factor (mainly language) which caused them to function as mentally retarded although they were not truly limited by capacity.

These examples show graphically the pitfalls into which our schools may fall unless we add to scientific testing objective data concerning the child's environment. We need to prepare and employ more teachers like Miss Bee. It will be necessary to move out into the home-school-community if we are to help children overcome the environmental deficiencies of the ghetto. We must also allow for different cultures such as that of the once hardy Eskimo and not overlook the talents of pupils from "different" backgrounds.

Special Education should be reserved for those who have true capacity handicaps and who do not merely function as if they have. The difference between the characteristics of these two groups of children is great — and the educational plans for each should be vastly different.

Thomas Kellaghan, Ireland

THE PSYCHOLOGICAL ASSESSMENT OF HANDICAPPED CHILDREN

The phenomenon of intellectual defect was recognized as far back as 1552 B.C. in the Papyrus of Thebes (Zilboorg and Henry, 1941). Extreme forms are of course often accompanied by physical handicap and gross retardation in motor development and so are easily recognizable. As societies became more complex — technologically, economically and particularly in the educational demands they made upon children, — it became obvious that many more children than the severely handicapped could not cope adequately. These children usually had no physical stigmata, and made satisfactory enough developmental progress until they started school. They were not the kind of children the Egyptians recognized as handicapped, children that could not cope with the demands of *any* society or culture; rather they were children whose deficiencies appeared only when heavy demands were made upon them and these deficiencies often revealed themselves quite slowly. The greatest demands probably occur during the school years: this would account, in part at any rate, for the great variations in incidence of mental handicap which have been reported for different age levels. For example, in the Wood Report (Great Britain, Mental Deficiency Committee, 1929), the incidence of handicapped children up to five years of age was 1.2 per 1,000; between five and nine, the figure had risen to 15.5 per 1,000; between ten and fourteen the figure had further increased to 25.6 per 1,000. After that it began to fall again; between 15 and 19, it was 10.8 per 1,000. (Total incidence in the Wood Report: 8.6 per 1,000). The concept of mental handicap then appears closely tied to the demands which the school makes upon children.

There is an obvious need for early identification of children who are going to experience difficulty and possibly failure in school.

In the beginning of the present century, the development of intelligence testing seemed the answer to problems of identification. Binet himself was primarily concerned with picking out the subnormal child for special education. After the appearance of the Stanford revision of the Binet Scale, the intelligence test became the most commonly used method of diagnosing defectiveness in the United States; some states used the IQ as the sole criterion of mental deficiency.

The use of the intelligence test however did not develop without considerable opposition. Its opponents were quick to point out the unreliability of tests, that the IQ is not constant but varies throughout life, that exact level of IQ is a function of the test one uses and, above all, that social behaviour and adaptation to everyday living should be considered in the diagnosis of handicap (Clarke, 1965). If one accepts a level of IQ less than 70 as indicative of mental handicap, what is one to say of people with IQs under that level that are quite capable of managing their everyday affairs? This was Tredgold's (1947) point when he suggested that the intelligence quotient is 'by itself, not only valueless but . . . . actually misleading as a criterion of mental defect.'

Those who supported the use of the IQ probably regarded *intellectual* behaviour as the central factor in mental handicap, while those who opposed it regarded *social* behaviour as central. Both seem important and should be taken into account in the assessment of handicap. This would seem to be the view reached in the 1956 revision of Tredgold's textbook which affirmed that 'no result of any such test should be accepted as the *sole* criterion for the diagnosis of deficiency . . . . It is generally agreed that test results should be supplemented by other data' (Tredgold and Soddy, 1956, p. 3).

Few would disagree with this point of view to-day. Intelligence is one factor to be considered in assessing mental handicap, the central factor perhaps, but not the only one. Particularly if assessment is made with an eye to treatment, it will have to take into account as many aspects as possible of the difficulties the child is likely to encounter in adapting to school. Usually these difficulties do not exist in isolation; low intelligence may be accompanied by a speech defect, a hearing disorder or emotional problems. Even for children who are not technically mentally handicapped, the need for a broad basis of assessment has been stressed; Landreth, Jacquot and Allen (1969), for example, have suggested a six-hour testing programme for children with learning difficulties referred to their Pupil Appraisal Center of North Texas.

While the needs for assessment in the case of the handicapped are obviously much wider than merely psychological, and may include the medical, visual, auditory, neurological and psychiatric examination of the child, I shall confine my discussion to aspects of psychological assessment. This is not to deny the importance of assessing aspects of a child's functioning that are the responsibility of disciplines other than psychology. We all know of cases where, for example, children with hearing difficulties were mistakenly labelled as mentally retarded. It is however outside my brief, and competence, to consider recent developments in these diverse areas.

While there is fairly general agreement that children with potential learning problems need to be identified early, there is still a great dearth of suitable techniques for such assessment within the field of psychology, as Deal and Wood (1968) have shown.

In recent years, the pre-school period has been receiving more attention than ever, largely because of interest in the problems of disadvantaged children, i.e. children, mostly from poor socio-economic homes, who are unable to benefit fully from educational facilities because the skills and attitudes they bring from their cultural background to the school make adjustment in school difficult and impede learning. Experience in working with disadvantaged children has led to a more analytical approach to the problems involved in adjusting to school; this has involved on the one hand an analysis of the skills and attitudes the child brings with him to the school, and on the other, a description of the skills and attitudes which contribue to success in school. Attention has been paid to such things as qualitative aspects of thinking, language codes, and various personality and motivational variables considered relevant to intellectual development (cf. Gordon, 1968).

Though the characteristics of what we now call the disadvantaged are not precisely those of what we traditionally called the mentally handicapped, there may be considerable overlap. Many of the children who at one time would have been labelled 'familial', 'subcultural' or 'aclinical' defectives, might now be recognised as disadvantaged. There is nothing new in this point of view. Burt (1961) has given close attention to background factors associated with backwardness at school, while the painstaking efforts of Sarason and Gladwin to relate mental subnormality to cultural factors have done a great deal to focus people's attention on this aspect of mental handicap (Masland, Sarason and Gladwin, 1958). In Ireland, as long ago as the first decade of the century, investigators working for the Royal Commission on the Care and Control of the Feebleminded, related mental defect to poor living conditions. Dr. Mills spoke on the 'conditions of intense congestion' in Galway: 'I do not think,' he wrote, 'that people live anywhere else in the Kingdom under conditions of more grinding poverty . . . The living-room of a two or three-roomed cottage is often used to house the cattle during bad weather . . . The houses . . . are for the most part very wretched.' He concludes, 'the sum of these causes has a most injurious effect in producing the low forms of mental and nervous degeneration which are prevalent in the district.' (Great Britain: Royal Commission on the Care and Control of the Feebleminded, 1908). More recently, the Commission which investigated mental handicap in Ireland in the early 1960s also demonstrated its awareness of the relationship of mental handicap to cultural factors when it recommended the establishment of pre-school centres which would provide learning opportunities absent from their normal environment 'for children from areas where there is a concentration of families in the low income group' (Ireland: Commission of Inquiry on Mental Handicap, p. 123).

At least some of our mentally handicapped then may be regarded as disadvantaged. However tests suitable for the disadvantaged may also be of value in the assessment of children who are not disadvantaged, simply because these tests are suitable for pre-school children, and focus on school-relevant behaviour. What I wish to do now is to pick out some techniques that show promise when used with young children and which may prove of value with the group of children traditionally called handicapped.

The techniques I will look at cover three broad areas: perception, language, and personality and motivation. The ones that assess non-cognitive areas are chosen in the belief that the variables they measure interact with cognitive variables and affect performance in school.

In the past, we have had a number of *tests of perception* which could be used with young children. These were sometimes used because of an interest in possible brain damage (as in the case of the Bender Gestalt Test), sometimes in an attempt to assess reading readiness — for example, the many tests of Ilg and Ames (1964) in their book *School Readiness*. Here I just want to add the names of two more tests related to school readiness which have been developed at the University of California at Los Angeles (Stern, 1968) and which can be used with children as young as three years of age, and thus are likely to be suitable for the handicapped child of five or six beginning school. The first is a test of visual discrimination (Visual Discrimination Inventory) which examines form constancy, figure-ground, closure and position-in-space. Particular advantages of the test are that the child does not have to produce a written response, and the fact that the test is preceded by a lengthy training sequence. The child is asked to match shapes simply by pointing as in the Stanford-Binet Discrimination of Forms item (IV-5). The second test is a measure of auditory discrimination (Children's Auditory Discrimination Inventory) and consists of a series of pairs of pictures one of which represents a common object and the other a nonsense picture. The child is told the name of each object; for example, 'This is a duck, and this is a dup. Put your finger on the dup.' The words in the test range in difficulty of phonemic contrast — from those involving gross discriminations, like *girl* and *hujuj* to ones involving minimal discriminations (*fish* and *fith*) (Stern, 1968). The test has an advantage over earlier ones like that of Wepman (1958) in that the child does not have to follow rather complex instructions which ask him to say if two sounds are the same, or different.

Both these tests may be regarded as improvements on earlier attempts to measure particular variables; in the field of language, to which we now turn, new variables have been isolated, and attempts made to measure these.

The best known test to attempt a formal breakdown of *language skills* is undoubtedly the Illinois Test of Psycholinguistic Abilities (McCarthy and Kirk, 1961), first published in 1961 and recently revised. The test was inspired by the Osgood (1957) model of psycholinguistic abilities, now rather out of date, and, while there is some evidence to support the theoretical structure and factor validity of the test (Bateman, 1965), some of the individual sub-tests are in the long run likely to prove more valuable than any pattern that might be derived from a consideration of differential performance on the test as a whole; for example, the auditory-vocal automatic test, now called the grammatic closure test, can provide useful insights into a child's ability to use contextual and grammatical constraints. In general, however, much remains to be done in defining the meaning of subscale scores and on validation of the ITPA generally (Weener, Barritt and Semmel, 1967).

Other language tests used in recent years with young children are less formal. Deutch and his collaborators (1967), for example, have used a variety of techniques to examine expressive and receptive language in first grade disadvantaged children. To examine expressive language, that is, relatively spontaneous speech, a child was told a story about a clown, and then asked to play a game with a papier-mâché clown; the child's use of major parts of speech, sentence length, number of dependent clauses and vocabulary range (type-token ratio) were then examined. Scoring on this kind of material can be tedious, and it might not be wise to consider this kind of assessment as a routine procedure. However, the kind of analysis involved might provide valuable guidelines to one who is teaching a child retarded in language development.

The field of *personality assessment* probably provides the greatest challenge for the test constructor. More and more we are becoming aware that personality factors may play an important role in determining how the child does at school. I am not aware of any very satisfactory test suitable for young children, particularly handicapped ones. However, beginnings have been made. For example, some attention has been paid to motivational factors, which seem so important as far as actual test performance (cf. Zigler and Butterfield, 1968), as well as long-term success in school, is concerned.

One measure developed by Beller (1957) can be used by teachers when they have got to know their pupils a bit. The teacher rates a child on a seven-point scale for such things as the child's attempts to carry out routine tasks by himself, to overcome obstacles in the environment, to take the initiative in carrying out activities; from this he gets an index of achievement striving. More recently the approach of Beller and others has been developed to produce the Children's Behaviour Rating Scale, which attempts to assess characteristics like persistence, dependence, competitiveness and reaction to frustration (Institute for Developmental Studies, 1965).

This kind of measure does not put the child in a situation in which he has to respond to specific demands made by a tester, but is based on adults' observations of children's behaviour. There is much to be said for the non-reactive or unobtrusive measure (cf. Webb, Campbell, Schwartz and Sechrest, 1966), particularly when one is dealing with young children. Such an approach indeed has a venerable tradition in the history of the assessment of handicapped children with the Vineland Social Maturity Scale (Doll, 1953). Early motor development, too, of course, is often assessed on the basis of observations of the child's progress in achieving head control, sitting, crawling, being aware of strangers, standing and so on (cf. Levinson and Bigler, 1960).

For children with communication disorders, an inventory completed by adults who know the child seems an essential feature of assessment. Rimland's (1964) diagnostic check list for behaviour-distributed children is of this type. This scale attempts to differentiate between autism and schizophrenia; it has also been successfully used to differentiate between autistic and mentally rearded children (Douglas and Sanders, 1968). The development of further inventories of this type to assess broader aspects of personality functioning, for use with young children, would seem most desirable.

The techniques I have outlined are suggestive rather than anything else at the moment. Further developments with these and similar techniques should provide a wider base on which judgments about severe learning problems can be based. One does not necessarily have to wait until the tests are fully developed as standardised instruments, provided one is sensible in their use and interpretation. There is much to be said for a more experimental approach to the assessment of the handicapped (cf. Mittler, 1968).

But one must be careful in the use of such tests, especially if any kind of serious decision is to be based on one's findings. The need for care should not be limited to the use of the less developed tests. No matter how well a test has been standardised or how widely it has been used, there still remain problems in interpretation. When one uses a test, whether it be the Stanford-Binet Intelligence Scale, the Wechsler Preschool and Primary Scale of Intelligence or some less known test, one is presumably attempting to assess certain characteristics of the child — these may be verbal, numerical, spatial, perceptual or one of a host of personality traits. If we measure these traits at all, we measure them indirectly — by looking for signs or indicators which we assume are related to the characteristics we posit. That is, we make inferences on the basis of certain indicators, and it is important to remember that they are inferences and treat them accordingly.

Recently Jan Smedslund (1969) has examined the problems surrounding the valid diagnosis of mental processes. Smedslund was concerned with performance on Piaget-type tests of conservation, but some of his remarks seem to have more general application. Normally, on the basis of a child's response (or failure to make one) on a test, we make a judgment about the presence or absence of a particular process, concept or capacity. But there are a number of reasons, Smedslund points out, why we might be mistaken in that judgment.

We may be wrong in inferring the absence of a process from the absence of a response because of

1. The child's failure to understand instructions. The language in the test may be unfamiliar to the child, the phrases may be too long, the number of bits of information in the instructions too great for the child to process. The child thus misses the point of the question and so cannot give the appropriate response.

2. Again, we may be mistaken because the child forgets instructions or other relevant information that was given him. At times, of course, we are interested in short-term memory (as when we ask a child to repeat digets or to obey three commands); but there are other times when problems in short-term memory may obscure other processes that we think we are getting at when we ask certain questions.

3. Difficulties in motivation may interfere with test performance, as Zigler and Butterfield (1968) showed in the case of disadvantaged children; when the order of administration of items in the Stanford-Binet test was altered so as to maximise the number of a child's correct answers, children got higher scores.

It is also possible, though less likely, that a child will give a correct response, though he does not in fact possess the process or concept we are interested in. This can occur through guessing or by acting on the basis of some previously acquired response tendencies. One can get over guessing by having a large enough number of items. From this point of view then, it may be a mistake to skip items because you think the child can't answer them.

There are particular hazards in making inferences and decisions in the case of young handicapped children. Because they are handicapped, their scores on an intelligence test will be low, and there is thus the likelihood of regression on re-testing. And because they are young, the predictive value of the tests will be limited (cf. Bloom, 1964; Levine, 1966). It is important then that the assessment of the young, possibly handicapped, child should receive particular care, and involve a variety of techniques and approaches.

As an important corollary we may add that the less radical the decision based on an assessment, the better. The most radical decision is to remove the child from the normal school and perhaps from his home; the least radical is to leave him in his normal school, in contact with normal children. It is doubtful if our assessment procedures are sufficiently good to warrant such a radical decision as the removal of a child permanently from his normal school, except in cases of severe handicap. Leaving the child in his ordinary school has important implications for assessment as well as, of course, for education; it means that assessment can be viewed, not as a once-and-for-all affair, but as an ongoing, to some extent experimental process closely interwoven with day-to-day education decisions. That should make not just for better psychology, but for better education as well.

Grace E. Woods, England

THE IMPORTANCE OF EARLY CLINICAL ASSESSMENT

Although we are mainly concerned with education, a handicapped child cannot be given the best help unless all his handicaps have been fully sorted out by the paediatrician or doctor in charge. As we know nowadays, most handicapped children have more than one defect and the majority of these defects date from birth or early infancy. Yet it is not uncommon for a defect such as a hearing loss or a visual defect to be missed until some time during the child's school life. The child would have benefited considerably if they had been noted early. To discuss each defect separately:—

Movement Defects

A high proportion of handicapped children have a movement defect. They are late in passing the milestones of movement, rolling over, crawling, walking, and the most obvious cause is mental defect. But any child who is late in motor skills should be investigated for cerebral palsy. The severe movement defect may mask a good intelligence. A child may be unable to hold his head up, due to hypotonia or athetosis. He may not feed himself because he cannot bring his hands to his mouth, as in children with primitive tonic neck reflexes i.e. in athetosis. A child who is late in sitting up may have spasticity around the hip joints, which prevents normal sitting balance. If cerebral palsy is diagnosed very early physiotherapy can promote normal movements as near the correct time for this function as possible, and in this way actually help intellectual development. If a child with a very floppy head can, with physiotherapy, be helped to hold his head up and see the world nearer the correct age for this function there must be an overall increase in the child's experience of life.

Apart from cerebral palsy, delay in walking may be due to other conditions such as a congenital dislocation of hip. I have known several cases where this has not been spotted in Mongols because the mental defect was thought to be the cause for the delayed walking.

Visual Defects

Defects of sight are possibly more often missed than defects of movement and yet it has been found that defective vision is more common among all types of handicapped children than among normal children. Gardiner has shown that 60% of brain-damaged children, 80% of Mongols, 75% of children with cyanotic heart disease and 25% of educationally subnormal children have visual defects.

The defect may be myopia — short sight — and this may occur particularly in children following premature birth and in Mongols. I have known a girl who lived in a resident home for mentally subnormal children. Her extreme myopia was not noted until she was 16 years of age and she required very thick glasses. Her learning as a child would have been increased if this had been earlier recognised.

Again, Gardiner has reported that brain-damaged children, particularly athetoids, are more liable to have hypermetropia (long sight). A little athetoid girl may be noted at an early age to have hypermetropia. Without glasses she could not learn to read and could not even appreciate pictures.

Squints and unco-ordinated eye movements also need early assessment and treatment. Often a teacher cannot be certain how much a particular child can see and may get little help from normal eye testing. The child may have defective vision or may have a field-of-vision defect and this may account for a child's abnormal posture, particularly when trying to read. Dr. Mary Sheridan has produced a series of very simple tests which can demonstrate poor vision at a very early age, and thus give the teacher the information he needs about the child's sight. There are grounds for saying that all handicapped children—mentally or physically — should see an ophthalmologist in the early years and have an eye refraction. We need ophthalmologists who are not just surgeons but are interested in children's diseases and in neurology and are prepared to devote a lot of time to testing these children. The teacher may find difficulty in differentiating defective vision from perceptual difficulties due to brain damage. The child's inability to recognise letters and shapes may be due to central brain damage and not to a local eye defect. These defects should be noted by a psychologist as early as possible. In certain clinical conditions perceptual problems are more likely to occur, e.g. in children following an extremely premature birth or in spastic diplegia or left hemiplegia.

If it is discovered, at birth or soon after, that a child is blind there is an urgent need for the mother to attend a special advice clinic to help her with the problems of blindness. Few clinics of this type exist. Many blind children are overprotected and they grow up to talk a lot but are very poor in manual skills and in self-help. Many become emotionally disturbed. Advice to the mother on play, sensory experiences and movement in the first few months of a blind child's life would be of immense help to his later development.

Hearing Defects

Deafness may be another additional handicap. Severe deafness may be mistaken for mental deficiency unless specifically tested. But a more severe problem is partial deafness, which we know occurs in cerebral palsy—particularly in athetosis following neonatal jaundice.

I knew a highly intelligent athetoid boy whose ability in arithmetic was much higher than his reading ability. It was not until he was 8 years old that it was discovered that he had a high frequency deafness and was missing the sounds such as 's', 'ch', 'p'. After being fitted with a hearing aid his reading age rose two years in the space of one year and he later obtained a University place.

It must be remembered that a child may be partially blind and partially deaf, and this is particularly true of children born following rubella in early foetal life.

All handicapped children should have expert hearing assessment and it does seem that one or two centres — well placed geographically — could deal with all the cases in a particular area. There is a need for all the modern devices, soundproof rooms, one-way screens, etc., and a highly trained personnel, to get a really good result. I have recently had forty blind children accurately tested in this way. Of course, good hearing is very essential to a blind child.

It must also be remembered that a handicapped child may become deaf due to frequent respiratory infection so any loss of hearing should be spotted immediately.

A child may be unable to speak and have a poor understanding of speech and yet any form of deafness can be eliminated by careful testing. These children have an aphasia or a form of communication disorder. Possibly all children whose speech development is delayed at the age of 3 years should be assessed by an interested doctor or psychologist for this defect and, at the same time, the somewhat different defect of autism should be borne in mind. This may be illustrated by a boy of three who had no speech but appeared to understand what was said to him if he bothered to attend. However, he showed particular ability at performance skills. His performance I.Q. was 100. He had already been diagnosed as mentally subnormal at 3 years of age and was spending his holidays at a hospital for the subnormal and his days with mentally handicapped children. After his performance ability had been recognised it was felt that he was a case of a child with a communication disorder. He was transferred to a special unit for non-communicating children and I hope in this way salvaged.

Epilepsy

In most handicapped children to-day we are dealing with children with abnormal brains and there is always a chance of epilepsy. Possibly all these children should have an electroencephalographic (E.E.G.) examination. It will then be possible to note if fits are likely to occur and the extent of the brain damage. Sometimes the E.E.G. reveals minor epileptic disturbances which have been missed.

An older boy, with left hemiplegia, had an I.Q. of 57 and was not doing well at school. A routine E.E.G. showed that he was having frequent undiagnosed petit mal attacks. With medication his I.Q. rose to 80 and he did much better at his school work. Later he left school to be gainfully employed in open industry.

If the clinician and teacher are working closely together and the teacher is warned, without alarming him, it may be possible to pass on the information about possible fits.

Lastly, for the full co-operation of parent and teacher in all cases of mental and physical handicap a named diagnosis should be made if possible and, I think, parents and teacher told.

Possibly all handicapped children should have biochemical investigations to eliminate the possibility of metabolic errors or other genetically determined conditions.

During the course of investigations of all cerebral palsied children in Bristol I came across four cases of presumed cerebral palsy who turned out to be cases of phenylpyruvic oligophrenia.

In the same way, any child whose condition appears to be due to a congenital abnormality of prenatal origin should have a chromosome investigation. One little girl, who presented as a spastic with hypertonia and plantar flexion, turned out to be a case of Cri-du-chat syndrome, due to the deletion of the short arm of one of the chomosomes of the B group.

In this way it is sometimes possible to give the parents a named diagnosis and I think this should be done. Parents are usually intelligent and will appreciate having exact facts to tell other relatives and, in particular, the siblings as they grow up.

I have mentioned various clinical investigations that I consider should be done on all handicapped children. I think we, as doctors, should attend case conferences with the staff of schools and inform them of the significance for training and education of all the child's defects and be willing to carry out investigations that the teaching staff feel necessary as they begin to unravel the problems of the handicapped child.

Vojislav Kovacevic and Konstantin Momirovic, Yugoslavia

SOME FACTORS DETERMINING SUCCESS IN SPECIAL AND REGULAR SCHOOLS

Introduction

In Yugoslavia about 2.12 per cent. of the regular school population are mentally retarded (Matic, Kovacevic, Momirovic, Wolf 1962).

According to our regulations, special schools should be attended by children with IQs of 50 to 70, and in exceptional cases by children with IQs of 70 to 80. The special school curriculum is usually just the shortened regular school curriculum.

Rational programs of work with mentally retarded should be based on knowledge about the different intellectual factors which affect achievement in academic subjects. At present, however, teaching in special schools is not based upon the factor structure which determines academic success. In order to recognize the specific factors determining achievement in academic subjects in special schools, it is necessary to study prevalent factors determining achievement in regular schools.

Aim of the study

The general aim of the present study was to establish the difference in factor structure of school achievement of regular and special school pupils. The basic hypotheses were:

(1) Structure of cognitive space of the intellectually normal and of the intellectually subnormal pupils is different (H. Pieron's controversial view).

(2) Structure of academic achievement in relation to cognitive factors of the intellectually normal and the subnormal pupils is different.

The aim of the study required the application of factor analysis to a battery of instruments measuring primary cognitive factors and scholastic attainments, in a sample of normal and subnormal pupils, equated for chronological age.

Sample of examinees

Intellectually normal pupils (N=101) were chosen by random selection of classes and schools in Zagreb. The sample is representative of the population of primary school pupils aged 12 to 13 years.

The sample of intellectually subnormal pupils (N=90) comprised all pupils of special schools in Zagreb, aged 12 to 13 years.

Only pupils from Zagreb were tested because previous studies had shown that there is a significant difference in variability of the urban and rural populations (Matic, Kovacevic, Momirovic, Wolf, 1962).

Sample of variables

1. *Cognitive tests*

Various preliminary studies showed that Kellogg's Revised Beta test, word fluency tests (W-1 and W-2), verbal symbolic reasoning tests (VIS-1 and VID-1) and Raven's Progressive Matrices (1938) were best suited for use in the present investigation.

Earlier studies in our country (Matic, Kovacevic, Momirovic, Wolf, 1966) showed that all subtests of the Revised Beta test are rather highly correlated with primary cognitive factors (symbolic, perceptual, and eduction factors but predominantly with the perceptual factor).

Verbal symbolic reasoning tests — VIS-1 and VID-1 (Matic, Kovacevic, Morirovic, Wolf, 1966) — were constructed with the intention of being simple enough for use with persons of minimum education and with mildly mentally retarded individuals. VIS-1 is a test of synonyms, consisting of 30 multiple—choice items; VID-1 is a test of antonyms consisting of 30 multiple-choice items. They are both good instruments for estimation of general second-order cognitive factor and are loaded with a primary symbolic reasoning factor.

To complete the battery of symbolic tests, two word-fluency tests W-1 and W-2 (Matic, Kovacevic, Momirovic, Wolf, 1966) were used. They are both modified Thurstone tests of word fluency from the PMA battery. They showed greatest saturation with the primary symbolic factor.

Raven's Progressive Matrices (1938) were used as well. This is primarily an eduction test, but it has also a rather high saturation with the G second-order factor.

Numerical test (MN-1) was used in order to cover better the symbolic space. Unfortunately, most numerical tests are not suitable for use on the population of mentally retarded individuals. That is especially true of tests involving number series which are among the best of the numerical tests of symbolic reasoning. Pieron's test of number series was modified for the needs of this study. A preliminary study had shown that this MN-1 test differentiates very well intellectually normal from subnormal subjects.

2. *Educability tests*

An educability test—MU (Kovacevic, 1965)—for individual application was constructed. Subjects are required to learn word definitions. Since the MU-1 test has low intercorrelations with cognitive test and with the G extracted factor, and low communality, it is plausible that this test measures something specific, probably educability. This test was modified for group administration in this study.

The educability test MU-2 was constructed with the intention of measuring visual - perceptual educability. Subjects are required to learn associations between five geometric figures and five numerical symbols.

3. *Achievement tests*

Achievement tests were constructed as well. They were to measure achievement in mathematics (MAT), mother-tongue (HRV), natural history (PRIR) and history (POV).

They were separately constructed according to school programs of regular and special schools, respectively.

4. *Experiment*

In 1965, all the tests were applied to a group of pupils of special schools in order to find out whether mentally retarded pupils were able to follow the instructions and whether the constructed instruments could be used in group testing (groups consisted of 6 subjects). In this preliminary experiment the constructed achievement tests were to be analysed statistically. The study involving both samples was carried out in 1967.

Conclusions

1. The regular school pupils obtained significantly better results than the special school pupils in all variables of the cognitive and educability tests. The difference was significant at the p less than .01 level.
2. On the various cognitive variables the special school pupils belong to the mildly retarded or borderline mentally retarded categories.
3. On the average, intercorrelations between applied tests are higher in the sample of special school pupils, who therefore seem to use a smaller range of cognitive functions when solving the items.
4. The following primary factors in the sample of regular school pupils were isolated by the modified multigroup method:

(1) Eduction factor (E)
(2) Mental speed factor (B)
(3) Symbolic factor (S)
(4) Group factor of academic knowledge (H)

The following factors were isolated in the sample of special school pupils:

(1) Factor of academic achievement (H)
(2) Perceptual factor (G)
(3) Residual factor significantly loaded on educability tests
(4) Symbolic factor (S)

5. Interpreting the isolated primary factors we can see the following:

   (1) The factor of academic knowledge in the sample of special school pupils includes all the achievement tests, but in the sample of regular school pupils only achievement tests of subjects where memory of facts is involved.

   (2) The primary factors of cognitive functions of the regular school pupils are different from and more various than such factors are in the sample of special school pupils. The perceptual factor is of special importance in the sample of special school pupils, and the symbolic factor is important in the sample of regular school pupils.

6. The second order factor g was isolated. In the sample of regular school pupils this factor is specially determined by the symbolic reasoning and eduction factors and by the factor of academic knowledge. In the sample of special school pupils the g second order factor is determined by all the first order factors mentioned above to about the same degree.

7. The basic difference in school successes between the two samples studied consists in the following:

   (1) The symbolic factor and eduction factor take part in the variance of achievement tests of mathematics and mother-tongue, in the sample of intellectually normal children. A special factor, probably a factor of memory, influences success in achievement tests where knowledge of facts is required. The general cognitive factor determines success in all school subjects significantly more in achievement tests of mathematics and mother-tongue, than in achievement tests of history and natural history.

   (2) In the sample of mentally retarded children the general cognitive factor operates rather homogeneously in the variances of all achievement tests. Probably a special factor also operates in the variance of achievement tests. This factor can be considered as a group factor of academic knowledge (where memory for facts is important).

   (3) School success as measured by these achievement tests in the sample of regular school pupils is determined by the g second order factor, the symbolic factor, the eduction factor, the academic knowledge factor, and least of all by a mental speed factor.
   In the sample of special school pupils their school success is determined by the g second order factor and by perceptual, academic knowledge, educability and symbolic factors, which are not very well differentiated.

Implication of this study

The respective factor structures of the school success of the regular and the special school pupils show that these two samples are qualitatively different.

Hence teaching in special schools should not only differ from regular school teaching in quantity of material taught, but in quality of material given as well. The fact that in the sample of special school pupils a perceptual factor (very much connected with the academic knowledge factor) was isolated, points out to the need for lessons organized on a concrete perceptual level.

Since in the sample of special school pupils who are on average only borderline retarded (and so should not really be attending special schools) a different structure of factors was obtained than in the sample of regular school pupils, so it can be assumed that the difference in the factor structure of school achievement in mildly retarded pupils would be even greater. The problem of a suitable curriculum for mildly retarded pupils is posed. It can also be assumed that the structure of factors determining school success in the mildly subnormal group is different from that in the group of borderline defectives, so the curriculum of special schools as it is at present organized would appear to be unsatisfactory.

E. Chigier and M. Chigier, Israel

CULTURAL FACTORS IN EARLY EDUCATION OF THE HANDICAPPED IN ISRAEL

The presence of a disability in a child is of major significance, both for the disabled and the non-disabled, and colours the behavioral relationship between them. Education is influenced by this relationship, and in itself can effect a change in the relationship.

The significance attached to the presence of a disability is derived from three sources:

(a) "Conditioning" — What you hear about the disability from parents, friends, newspapers, jokes, casual remarks.

(b) Exposure — What you see and feel for yourself by coming into contact with disabled.

(c) Education — What you are positively taught about the disability, and the correct attitude to adopt towards it.

All three sources, but especially the first, stem from cultural factors.

Israel, with its host of immigrants who have arrived over the past twenty years from 70 countries of the world, provides a rich laboratory for the study of these cultural factors.

In the country two major streams exist — one European and the other Oriental — each representing about fifty per cent. of the country's population.

The Europeans (*or Ashkenazim*) came to Israel after having been directly or indirectly affected by the Nazi Holocaust. Half of these (about 250,000) are concentration camp survivors, many of whom have been scarred emotionally.

The Orientals consist of 3 major groups:

- *The Yemenites* who maintained their own culture intact for thousands of years, and came to Israel as a complete community.
- *The Middle Eastern Group* from Persia, Turkey, Syria, Lebanon, Iraq. Slight "Westernization" had occurred before immigration.
- *The North African Group* from Tunis, Algeria, Lybia and Morocco, who have had particular problems of integration due to lack of leadership, partial "westernization" through contact with the French culture, and a certain amount of cultural disintegration.

As a result of prolonged contact with the host population, major differences exist between the European and Oriental groups.

The European element is individualistic, and concerned with doing, changing, and improving. It tends to be secular, with small family units, and has had a greater exposure to nationalism as an identifying force. This group came to Israel with a desire to repudiate the old pattern, and to build a new way of life. Its philosophy is centered about the place of the individual in a new nationalistic framework.

The Oriental element generally has a poor socio-economic level, and originally was patriarchal in nature, with the extended family as a dominant feature. Religion plays a prominent part, and belief in the supernatural control of events (both good or bad) is strong. Since nationalism is a nascent phenomenon in the East, identification is essentially on the basis of family and religion. This group came to Israel in order to perpetuate their way of life rather than to adopt another.

Research in Israel on the ways in which "education", "exposure", and "conditioning" affect the significance of a disability suggests the following conclusions:

Education about disability

Education with regard to and about disability is a generally neglected subject. Special education deals essentially with techniques *for* the handicapped and not with information *about* the handicapped. If the handicapped child receives little formal education about his handicap, and how to cope with it, it is not surprising that the general public receives even less. Approaches to the public are generally sentimental, conscience-arousing, shock-provoking, or evangelistic — or simply dully informative. As an outcome of two research projects in Israel sponsored by Social and Rehabilitation Services, U.S. Department of Health, Education and Welfare, I have had the opportunity to try using the movie as an educational communication device.

One way of changing a "stereotyped" outlook, in lay or professional people, teen-agers or adults, is to present an alternative. The movie "Ordinary Work" shows a large number of severely mentally retarded carrying out a dozen different kinds of sport and agricultural activities which are almost universally regarded as being beyond their ken. An impressive presentation of the alternative will permit the audience to alter previous attitudes.

The second movie "Different — but not Strange" attempts a more difficult task. By the use of a contemporary style, outside examples, a rapid tempo, with a number of very short scenes, the movie was an attempt to make lay audiences think about themselves, and not about the handicapped. The range of situations presented permits each observer to pick up some particular point which is relevant to his attitude to the handicapped. Empiric work with the movie with thirteen year olds suggests that change becomes manifest, usually after a period of incubation.

This whole field, i.e. the use of modern communication theory and technique, is new and exciting, but relatively unexplored.

Exposure to disability

Once it was regarded as educationally sound and desirable to prevent children coming into contact with someone who has a disability. There were two thoughts that prompted this policy:

(a) An overt disability is something "peculiar, unaesthetic, disturbing or shocking";

(b) Children as tender, fragile, delicate objects should be shielded from such "disturbing situations."

To-day, neither of these premises holds water. Healthy children are not that shocked or disturbed by meeting up with a disabled child. Moreover, many of them acquire a healthy realistic attitude to the disabled. Research is limited as yet on this subject. J. Jordan's survey of attitudes to the physically handicapped in eleven nations has shown that the nature of the initial exposure to physical handicap, i.e. pleasant or otherwise, is more significant than the amount of exposure and information provided. For children, meeting with the disabled in the naturalistic setting of kindergarten and school is usually a valuable and enriching experience. A policy of integration is to be recommended — and if it is good for the non-disabled child, it is more than likely that it will be good for the disabled child if suitable services are provided.

In Tel Aviv, all blind children attend a regular school; nearly all deaf children at nursery school age go to integrated nursery schools; fifty per cent of deaf children go to special classes in regular schools; aphasic children are in special classes at regular schools; and 38 per cent of cerebral palsied and 81 per cent of children disabled because of poliomyelitis attend regular schools in the city. Some countries have more intensive programmes for integration but in many countries the subject is controversial. The final answers as to the value of integration programmes will probably come from social psychologists, not from educationalists.

"Conditioning"

Now we come to "conditioning" — the unconscious acquisition of a rating system about disability on the part of the non-disabled or the disabled themselves. Where does this stem from? How does cultural background affect attitudes?

The first and perhaps the most important agents in conditioning the child towards his handicap are the parents, especially the mother. If, as a result of their cultural background, parents have been led to believe that a certain disability has a particular significance, a mysterious etiology or an inevitable outcome, this attitude will determine parental and child behaviour and parent—child interaction. A study of the parental attitudes of 700 parents of post-polio physically handicapped adolescents of whom 39 per cent. were European and 61 per cent were Oriental, showed differences in socio-economic level, differences in activity attitude and differences with regard to institutionalisation. The latter difference was found to be dependent on the extent of the disability in sub-groups in both communities, but not related to the extent of the disability in the traditional Eastern group of Yemenite parents and the modern group of parents from Central and West Europe. It was clear that cultural background did play a part in determining parental attitude.

A more recent study (supported by the Mental Retardation Branch, S.R.S. H.E.W.) dealt extensively with the attitudes of 184 mothers of mongol children, of whom 103 were European and 81 were Oriental. The following psychosocial findings were found:

—The European family is smaller and on a higher socio-economic level.

—The proportion of mongols in institutions was the same in each ethnic group (35-39%).

—Social quotient (Vineland) distribution did not differ in the two groups.

—Half the mothers in each group thought that the mongol had an adverse effect on siblings, but only in the European group was there any relationship between this feeling and a favourable attitude towards institutionalisation.

—The proportion of mothers who did not know why the child was born a mongol was the same in each group. Of those who gave a reason, European mothers tended to give more physical reasons than was the case with Oriental mothers.

—As compared to Oriental mothers, European mothers showed more interest in learning about mental retardation, were more active in parents' organisations and more of them felt that the father shares in the care of the children.

—Maternal attitude with regard to self-blame, family limitation, activity and institutionalisation, did not differ significantly between the two groups, but Oriental mothers tended to have a higher disciplinary attitude.

—European and Oriental mothers consulted rabbis and non-medical experts to the same extent, but more European mothers consulted medical experts and psychologists, probably because of greater opportunity.

Differences here were not as striking as one would have been led to believe. Almost all the differences found could be explained as differences in socioeconomic level . . . i.e. the poor with more children have less time and energy for the handicapped child, and for paying attention to the effect of the mongol on siblings, or learning about mental retardation, going to psychologists, or being active in a parents' organisation.

Another study supported by the American Association for the Aid of Crippled Children is based on the use of the "Picture Ranking Test" of Richardson, with pre-adolescent healthy children who are old enough to have been exposed to and influenced by the prevailing cultural trend, but are too young to be evasive or guarded.

In a study by Richardson et al. (1961), children aged 10-11 years were asked to give a preference ranking of a standard set of drawings of children who differed only with respect to physical disability. The drawings used were as follows:

I.	A child with no physical handicap	A
II.	A child with crutches and brace on left leg	L
III.	A child seated in a wheel-chair with both legs covered by a blanket	W

IV.	A child with the left hand missing	H
V.	A child with a facial disfigurement on the left side of the mouth	F
VI.	An obese child	O

This 1961 study showed a consistent preferential order, i.e. A L W H F O, amongst six sets of American subjects. Rankings were not affected by characteristics of the rater, such as sex, presence of physical handicap, socio-economic status, race, urban-rural differences, or setting of the interview.

A later paper by Richardson et al. (1963), showed that adults displayed the same preference pattern towards the various disabilities. However, children coming from two sub-cultures which are considered to hold different values related to physical appearance, i.e. Italian and Jewish groups of low socio - economic status, showed a variant pattern. The Italian preferential order was A F L W H O, i.e. facial disability ranked second while obesity remained in the last position as in other American groups. The Jewish preferential order showed a greater difference, A F H O L W, with facial disability in second place and obesity in fourth place.

A parallel study using the same pictures and technique was carried out in Israel in 1966. Each group studied consisted of about 100 children, with approximately equal numbers of boys and girls.

The groups were chosen to show as much range as possible concerning

(a) Father's country of origin,
(b) Urban-rural residence,
(c) Orthodoxy (as a community),
(d) Length of stay in country,
(e) Socio-economic status.

The overall ranking pattern found was similar to that of the American Jewish group. However a majority cluster of 8 groups followed the American Jewish pattern, while a minority cluster of 2 groups showed the American normative pattern. The only common factor in the majority cluster is the low socio-economic level of the neighbourhood, as judged by standard of housing, crowdedness, standard of clothing and cleanliness of children. The minority cluster on the other hand had a middle socio-economic level.

It would seem, therefore, that the population under survey reacts to the pictures in one of two ways:

(a) Children living in a neighbourhood which has a "middle" socio-economic level react by ranking physical disability higher than cosmetic disability.

(b) Children living in a neighbourhood which has a "low" socio-economic level react by ranking physical disability lower than cosmetic disability.

Richardson's 1963 study was restricted to Jews of low socio-economic status so it is not surprising that the majority cluster in Israel, i.e. groups from a low socio-economic neighbourhood, show the same pattern as the American Jewish group.

It is difficult to find a clear cut explanation for the unexpected finding that socio-economic level influences the pattern of choice of children in Israel. In reporting on American Jewish children, Richardson et al. (1963) suggested that the association between feeding and affection may explain the difference in the ranking of American normative and American Jewish children. Emphasis on food and its affective implication exists among Western Jewish communities in Israel — where findings are similar to American normative children — but this is not the case with Oriental and Arab groups, who nevertheless show the same pattern as American Jewish children. Our findings therefore negate this explanation. The other possible explanations are:

(a) The ranking of children from middle class neighborhoods may reflect a more sophisticated attitude, with better education, more tolerance and less prejudice about physical handicap, greater emphasis on cosmetic appearance, and possibly more exposure to the American outlook;

(b) Children from low-class neighborhoods are more dependent on physical ability for survival and progress. Evidence of physical disability is therefore seen as a threat and thus rejected — in many cases quite emphatically. This is not the case with children from middle class neighborhoods, where intellectual rather than physical ability is stressed, and affluence can diminish to a certain extent the severe limitations created by physical disability.

It is possible that both of these explanations, taken together, account for our findings.

It would seem therefore that socio-economic factors, rather than cultural, are important in creating the climate of opinion that surrounds a handicapped child. But in Israel, this is not clearly so. The difference in socio-economic level is directly linked with being a member of the European or Oriental group, with a few exceptions. Since Israel is a new country, and hardly anybody in either ethnic group came to Israel with a fortune, the resultant difference in socio-economic levels is a product of a cultural background. How then does culture work?

The supposition is as follows. The European as compared to the Oriental immigrant, has had a longer period of education. Education instils in one the feeling that the individual can control the situation rather than vice versa. The belief in situational control motivates the European immigrant towards long-term planning, saving, extra effort and upward movement on the socio-economic ladder. Physical disability is thus less of a threat than in the Oriental community.

Situational control amongst the European element includes family planning. The European family thus has less children, with a further difference in socio-economic level. The emotional implication is however more significant. Most children born in a European family are the result of planning. Since the child is an "invited" one, parents are more responsible for him and this feeling of responsibility extends for a longer time than would otherwise be the case. When the invited child turns out to be handicapped from birth (mongolism) or infancy (poliomyelitis), the feeling of responsibility is accentuated, the question of relationship to siblings (who are also the products of planning) is more sensitive, and the problem of institutionalisation is more troublesome and conflict-laden.

The Oriental parent, on the other hand, usually has children by the dictates of nature, finds the problem of managing to cope becoming more acute as the handicapped child grows older, and the family grows larger, and generally considers his responsibility a limited one since he didn't ask for the child to be born. Thus it is suggested that both differences in socio-economic level and differences in parental attitude, stem from basic cultural differences, and in turn create further inter-relating differences. The disabled and the non-disabled child become "conditioned" to disability as a result of the interplay of a number of ecological factors.

Conclusion

The early education of the handicapped needs to be broadened to deal with the questions raised in this paper. Transcultural research is called for so as to understand what is universal and what is specific in dealing with the very human problems of a family with a handicapped child.

Friedrich Bittmann, Germany

EXPERIMENTAL STUDIES OF THE LEVEL OF ASPIRATION OF CHILDREN SUFFERING FROM MOTOR HANDICAPS

The best-known method of ascertaining level of aspiration can be exemplified thus: The person to be tested has to add up one-digit numbers in a certain time, to insert small pegs into appropriate holes in a board, or to trace printed mazes with a pencil as quickly as possible. After the communication of the result of each trial by the tester, the testee gives himself a goal for the next session e.g. either a definite level of achievement, or a definite time in which to reach a set level of achievement.

This procedure of setting a goal, then attempting to realise it, and then setting another goal, can be repeated as often as required. In this method of study of goal-setting behaviour, the total difference between the goals and the actual achievement is the so-called goal-discrepance value. The degree of discrepancy allows conclusions about the level of aspiration: if the goals set lie on the average somewhat above the actual achievement, then one speaks of a balanced to high level of aspiration; if they lie at the level of or under the actual achievement, then one speaks of a low level of aspiration. If the goals set lie far above the actual achievement, then one speaks of a too high unrealistic level of aspiration.

What gave rise to our investigation was a re-examination of the only two studies we could trace of the level of aspiration of cerebral palsied children: Wenar and Bernsdorff studied the setting-of-a-goal behaviour of CP-children on a simple deftness-of-hand task given to two relatively small groups of children and young people.

Wenar (Child Development 24, 2, 1953) required his subjects to place the largest possible number of small wooden sticks into suitable holes in a predetermined short time. His subjects were 12 heavily handicapped, 12 lightly handicapped, and as a control group, 12 non-handicapped children in the age range of 8-10 years. The experiment consisted of five successive trials, with a declaration of the goal beforehand by the child in each case. Only the non-handicapped children of the control group, after an initial too high setting of goals, finally set realistic goals, so that eventually on average, the achieved number of inserted sticks lay only one under the goal set. On the other hand, the spastic children, after an initial adaptation of their goals to their achievement, from the second and third attempt onwards set continually higher goals: the discrepance between goal and achievement became greater from attempt to attempt.

A control experiment, carried out in 1958 by M. Bernsdorff of the Psychological Institute, Münster University, on 50 spastic children and young people in the age range of 8-16 years and a similar size parallel group of non-handicapped schoolboys and apprentices yielded comparable results.

We suspect that the test conditions used by Wenar and Bernsdorff placed the CP-children under very strong situational pressure (a) because of the short time limit and (b) because of the motor nature of the tasks. The resultant emotional tension could have led to rather irritated behaviour so that the findings of Wenar and Bernsdorff said less about the level of aspiration of spastics but much more about their lesser frustration tolerance and lower emotional stability under extreme conditions of stress.

Therefore in our study, we avoided using an exclusively motor task with a very short time limit. Instead we developed a series of six mosaic patterns graded according to difficulty, and which the children could choose freely and as often as desired.

The mosaic patterns arranged in order of difficulty were placed before each child and the tester had the wooden cubes necessary for reproducing ready. The test instructions explained that all pictures could be built with the available blocks, that the first picture was the easiest, that each subsequent picture was then somewhat more difficult, that the last picture was the most difficult, which almost no child could build; further an indication of the liberal time limit was given (five minutes for each attempt).

The test group consisted of 93 boys and girls in the age range of 7;0 to 10;11 years from special schools for CP-children in several larger German cities.

We roughly differentiated the children according to the degree of their handicap. We shall speak of a "heavy handicap" when a child either cannot or can only with exhausting effort, walk by itself. We speak of a "light handicap" when a child can deal with normal daily needs itself, and can move without the help of a wheelchair or crutches, etc. The whole group of 93 children consisted of 57 severely and 36 lightly handicapped children.

The comparison group consisted of 125 "healthy" children, i.e. boys and girls without motor handicaps, also in the age range of 7;0 to 10;11 years. We had all the boys and girls of the 2nd, 3rd and 4th year of a fully organised two-branch basic school of a middle-size city.

We chose the non-verbal "Coloured Progressive Matrices" of Raven for the intelligence matching of the children, whereby as far as possible disadvantages for the CP-children were avoided.

Only a brief summary of the findings will be given:

1. General activity is very different for the children of each group. Between 3 and 30 pictures will be built (or attempts will be made to build them) in one test. Average: about 9 attempts, of which about 2.5 are failures with the spastics just as with the normal children.
2. The spastics have a tendency to begin more frequently than normal children with a new pattern which they cannot complete.
3. The spastics are therefore much more strongly hit by failure on the first choice. The difference in the return to easier pictures was statistically

examined for the two groups of spastic and normal children who went back and showed itself to be very significant (p=0.01).

4. The lesser impression of failure on the normal children shows itself also in that these more frequently choose again the picture which they could not complete, immediately after the failure (healthy children = 34.5%/ handicapped children = 16.7% or 13.8%). The small number of spastics who choose the same picture again and their more frequent going back after the first failure differ very significantly from the opposite to this, with the children of the control group, who more frequently chose the same picture again and more seldom went back (p = 0.01).

Choice statistics

The whole behaviour of all children tested could be classified (following Heckhausen and Wagner) according to the following choice strategies:

Strategy I: Choice courses with which there are no failures. The children choose only very easy pictures, which they can deal with successfully.

Strategy II: Choice courses, where the child to be tested either gives up at the first failure, or builds further, but only below the level of the picture at which the first failure took place.

Strategy III: The child to be tested makes *one* attempt to overcome the failure suffered. This attempt can, as in some cases, take the form of choosing the next more difficult picture. With his following choices the child to be tested remains in the sphere which was successfully dealt with before his failure.

Strategy IV: Two attempts are made to overcome the failure. This strategy can be evinced by immediately choosing the picture not solved twice, or successful choices of easier picures can lie between repetitions of the failure picture.

Strategy V: The child to be tested perseveres in coming again and again to the upper limit of the sphere of difficulty already dealt with. Choice courses, in which he tries three or more times to build the picture not solved, belong in this category.

Strategy VI: The limit of achievement ability is not really accepted; after the failure, no increased efforts are made, but either immediately or after reattempting the picture without success, some pictures will be tried which are much more difficult than the picture on which the failure took place. One has the impression with children who behave in this manner, that the achievement *wish* is greater than the achievement *will*. They do not return to their actual achievement limit after several unsuccessful attempts in the higher difficulty sphere, but they either give up or choose another or several pictures in the sphere successfully dealt with previously. The most characteristic feature of such choice courses is therefore, that the child does not intensively try at the upper limit of the sphere of difficulty dealt with to extend these limits upwards, as happens in the choice courses of Strategy V.

Using the terminology of Heckhausen and Wagner we can depict our behaviour groupings I/II as avoiding, III as excluding, IV as trying, V as overcoming and the category VI added by us as an unrealistic too high choice strategy.

We may regard the different choice strategies as forms of level of aspiration behaviour:

The avoiding choice strategies correspond to an *undeveloped level of aspiration.* We found this with 37% of the spastics and with 23% of the non-handicapped children. This difference is statistically significant at the .05 level of confidence.

The excluding choice strategies correspond to a *low level of aspiration.* We found this with 22% of the CP-children and 28% of the non-handicapped children. This difference (and all following differences) is statistically non-significant.

The attempting choice strategies correspond to an *average level of aspiration.* We find this with 16% of all CP-children and 21% of all non-handicapped children.

The overcoming choice strategies correspond to a *high level of aspiration.* We find this with 16% of all CP-children and 13% of all non-handicapped children.

One can depict a clearly unrealistic too-high setting of goals as being characteristic of an unrealistic *too high level of aspiration.* We find this behaviour with about 8% of the spastics and about 14% of the healthy children. The difference cannot be statistically evaluated, but it shows a tendency for too high level of aspiration behaviour to occur more frequently in non-handicapped children than in CP-children.

Our findings stand in clear contrast to the results of previous studies. What explanations are there for this?

Wenar and Bernsdorff report that CP-children in contrast to normal children do not gain from practice. This can be explained: Random uncontrolled movements not obeying the will impulse characterise the behaviour of CP-children. All forecasts about an effect, which primarily depends on such a motor constitution, must indeed have the character of a game of roulette. Hence wishful behaviour aimed at success will manifest itself in such a situation.

These short remarks will suffice to explain the results of previous investigations. We think that the experiments of Wenar and Bernsdorff dealt not with the level of aspiration, but with the varying degrees of stability and resistance in situations in which an extremely high mental burden was present, i.e. with the ability to act in such situations in an ordered and sensible manner.

Regarding our test: By the stronger participation of cognitive factors in the choice decision (because of the long solution times allowed for pictures of graded difficulty) the children to be tested engage in more undisturbed consideration and comparison. This results in the success and failure probabilities being more carefully thought about. The resultant conduct of the children leads sooner to an underestimation than to an overestimation of their achievement ability. Possibly the given conditions in our test lead to the chances for success somewhat less influencing the choice decisions than the fear of failure. Used with the spastic children, that means that in a more careful and less deturbed atmosphere a series of choices is made (which was not possible in Wenar's test) based on the background of their previous life-experience, in which failures have taken place more often than with children not suffering from motor handicaps. In short: as the test leaves sufficient time for reflection on the planned and already achieved performance, it consciously activates the more or less long history of previous failures.

We find our assumptions supported when we compare our findings with the results of a test of Davids and White about the effect of success and failure on the level of aspiration of emotionally disturbed and normal children. Two groups of about 11 year old boys were studied, of which one due to serious behavioural disturbances was being treated in a psychotherapeutic home. Tests of settings of goals were carried out, whereby failures were manipulated by the tester. The reactions of the emotionally disturbed children to their failures show a strong similarity to the failure reactions of the CP-children tested by us. Even if the psychic structure of the children tested by Davids and White was other than that of our CP-children, one can assume that there are certain common characteristics important in achievement situations: namely the increased sensitivity to failure and the experience of failure.

The parallels between the children tested by Davids and White and the CP-children tested by us, show themselves clearly in the following points:

1. Davids and White report that their group of disturbed children "enter the test situation with greater interest and stronger ego participation, as their initial level of aspiration was significantly higher than that of the normal children." As we have seen, very many more spastics than non-handicapped children experience their first failure through initial choice of a goal which is too high.

2. The disturbed children of Davids and White lower their level of aspiration after artificially caused experience of failure much more than do their normal children. The CP-children studied by us show the same reactions to the first failure and similar reactions to all experienced failures in the course of their choices.

There exist, therefore, noticeable similarities in some characteristics of behaviour in the formation of the level of aspiration. We may presume that as a result of negative experiences in the sphere of achievement with a great part of the spastic children studied by us, similar disturbances of the self-consciousness are present as in the disturbed children of Davids and White. We agree with Davids and White's conclusion that: "When the negative irritation of failure appears on an organism which is sensitive in a high degree and unusually receptive for threats, loss and non-acceptance, it causes a stronger reaction than with an organism which reacts less quickly to failure."

D. N. MacKay, Northern Ireland

EARLY STAGES IN THE TEACHING OF READING TO MENTALLY HANDICAPPED CHILDREN

INTRODUCTION

The problem of reading amongst medium grade subnormals[1] raises two main questions: Can medium grade subnormals read or be taught to read? If they can be taught to read, is the effort involved worthwhile?

Hermelin and O'Connor (1960) noted that, although it was generally accepted that imbecile children cannot be taught to read, few systematic investigations of their reading ability has been reported. In the first of a series of studies of the effect of different teaching methods on reading by severely subnormal children, Hermelin and O'Connor (1960) presented thirty-two patients (mean C.A.: 15; mean I.Q.: 42) with 200 words selected from a speech vocabulary list of severely subnormal patients, collected by Mein and O'Connor (1960). These 200 words ("heavy duty" words) comprised all those used by 50 — 100 per cent of the severely subnormal patients whom Mein and O'Connor had studied in four hospitals for the subnormal. The number of words any of the 32 children could read correctly ranged from 0 — 200. The mean number of words read was 45. Those words which occur in the speech of 74 — 100 per cent of imbeciles were read by 68 per cent of the children while words used in speech by 50 — 73 per cent were read by only 24 per cent. "If the frequency with which any one particular word occurs in spoken vocabulary in one group of imbeciles and the frequency with which it is used by another group is compared, a highly significant relationship is found." (Hermelin and O'Connor, 1960, p. 145). Thus medium grade subnormals, if they read at all, are more likely to be able to read words which appear frequently in their speech than words which appear infrequently or not at all in their speech. All the patients studied by Mein and O'Connor and Hermelin and O'Connor were resident in hospitals for the subnormal.

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[1] The term "medium grade subnormals" refers in this paper, to persons with I.Q.s of between 20 and 49. It is roughly comparable to the term "imbeciles" which is commonly taken to describe individuals who obtain intelligence test scores of between 25 and 50 I.Q. points.

In later work O'Connor and Hermelin (1964) describe a series of ingenious experiments in which different methods of training imbeciles to recognize words or letters in print were studied. They also report on the progress made by eight imbecile children aged between 11 and 15 and with I.Q.s of between 35 and 49 on lessons involving the reading of words and sentences based on the Mein and O'Connor spoken vocabulary list. Increases in reading scores over a year were highly significant.

PRESENT STUDY

1. *Aims*

The present paper is a preliminary report on a four-stage investigation carried out at Muckamore Abbey Hospital into the verbal abilities of medium grade subnormals. The aims of the investigation were:

I To "build into" the patients' vocabularies 26 common words of equal length (trigrams).

II To teach the patients to read these 26 words.

III To teach the patients to identify letters.

IV To teach the patients to make up the 26 words from the letters, i.e. spell.

2. *Procedure and materials*

Stage I

Following the suggestions made by Hermelin and O'Connor (1960) and O'Connor and Hermelin (1964) that medium grade subnormals are more likely to be able to read words which appear frequently in their speech and that every attempt should be made to enlarge their vocabularies, it was decided that words which have high association values for persons of normal or above normal intelligence should be exposed in speech as frequently as possible to the patients taking part in this project. Twenty-two of these words were CVC trigrams taken from Archer (1960); with one exception they had very high association values. Four other words of different composition were also included. Twelve of these trigrams also appeared in the Mein and O'Connor "core" vocabulary as words which are used frequently by medium grade subnormals.

Stage II

Once the patients had assimilated the 26 words into their spoken vocabulary, they were presented with the same words in print. The words were printed in as many places and in as many contexts as possible. Patients were encouraged to seek the help of their more intelligent peers or of the nurses in their attempts to learn to read the words.

Stage III

When the patients had mastered stage II, they were taught to identify 23 of the 26 letters of the alphabet. These consisted of plastic capital letters 2" high. Three letters were omitted as they did not appear in any of the trigrams. During this stage, patients worked in pairs.

Stage IV

Having learned to read the 26 words and having learned to identify the letters involved, the patients then had to learn to "spell" the words. Again, they worked in pairs. The plastic letters were also used at this stage.

The criterion for learning a given item was three consecutive correct responses on each of two successive testing sessions.

3. *Subjects*

Nineteen medium grade subnormals resident in the hospital took part in all the stages of the investigation. The mean C.A. of the group was 21.4 and the mean I.Q. was 45.

4. *Results*

Stage I

An independent judge was satisfied that all 19 patients had successfully assimilated the 26 words into their vocabularies within five weeks. They were also successful in defining each item by whatever means was easiest for them, whether by denotative or connotative methods or simply by mime.

Stage II

Of the nineteen patients, two completely failed to read any of the cue words, even after prolonged training. The other subjects successfully learned to read all 26 words. There was a marked pattern in which the items were learned. There was also a high, positive correlation between the frequency in speech of the twelve words taken from the Mein and O'Connor (1960) list and the order in which they were learned. There are good grounds for supposing that, despite the efforts to present the critical words an equal number of times in the experimental situation, extra-experimental frequency of experience with items does seem to affect the order in which the words are learned.

Stage III

The same subjects who failed to learn to read the words also failed to identify any of the 23 letters. The other seventeen subjects succeeded. Again, there was a marked pattern in which the items were learned but the correlation between the frequency with which the letters appear in print (Pratt, 1951) and the order in which they were learned was insignificant.

Stage IV

The two subjects who failed to learn to read the words or to identify letters also failed, not surprisingly, to learn to spell. As in the previous stages, all the other subjects succeeded and there was a marked pattern in which the items were mastered. The rank order correlation between the frequency with which the twelve words which appear in both the Mein and O'Connor (1960) and Archer (1960) lists and the order in which they were learned was +0.42 (p less than .05).

5. *Discussion*

From the results it seems as if learning to read, identify letters and "spell" is, for medium grade subnormals, an all-or-none affair. If they learn one item, they can eventually learn other items of equal length; if they fail to learn one item, even after prolonged training, they are unlikely to learn other items of equal length. Despite the efforts to "build" words into the patients' vocabularies before training began, it seems clear that the frequency with which the patients experienced these words outside the experimental sessions affected the order in which they learned to read and to spell them. However, the frequency with which they experienced seeing individual letters outside the experimental situation did not affect the order in which these items were learned.

From the work carried out and summarized by O'Connor and Hermelin (1964) and from the results obtained in this investigation, it is clear that most medium grade subnormals with I.Q.'s between 35 and 50 can learn to read. However, the present investigation took about a year to complete and the case for teaching medium grade subnormals to read and to spell common words, and to identify letters, does not appear to be proven. There may be better grounds for training them to recognise words in print which directly affect their day-to-day behaviour, particularly if they are to return eventually to the community. These words would presumably be those frequently seen on signs, posters, public notices and so on. "Barking" at this type of print may be a more useful exercise provided that it is meaningful to the subnormals concerned.

M. F. McHugh, Ireland

SOME APPLICATIONS AND LIMITATIONS OF OPERANT CONDITIONING IN THE TRAINING OF SO-CALLED INEDUCABLE CHILDREN

I shall discuss first some difficulties which arise in attempts to train moderately and severely mentally handicapped children below I.Q. 35 by operant conditioning techniques. Then some local research in this field will be described.

The slides illustrate that many low-moderate and severely retarded children, though incapable of profiting even from special schooling, can learn *inter alia* to wash themselves, undress and dress, polish shoes, butter bread, lay the table, wash ware. We will be considering the operant conditioning of children such as these. For our purposes operant conditioning can be simply taken to mean training an individual to behave in a particular way by reinforcing or rewarding the desired behaviour when it occurs.

Since operant conditioning procedures can successfully shape behaviour in infrahuman species which lack language and higher reasoning powers, *prima facie* it appears appropriate to use such techniques in the training of low-moderate and severe mental retardates.

However, as Headrick (1963) has pointed out, the adaptation to human beings of conditioning techniques originally developed for lower animals poses many difficulties. The basic snag is that while it is relatively easy to place in a standardized situation an animal of known history and with a limited repertoire of responses, it is hard to simulate these conditions with humans.

Furthermore, special problems beset any attempt to carry out the operant conditioning of severely retarded children.

(a) The likelihood of the required type of response being elicited may initially be so low that very prolonged training may be necessary.

(b) Some severely retarded children learn to respond at what is for them a high rate but then decline in rate during following sessions. Satiation with the reinforcement or reward provided does not seem to be the explanation of this spontaneous extinction of the response and, according to Rice (1967), spontaneous recovery often does not occur.

(c) Day-to-day variation in response rates may result from changes in medication or from emotional reactions to events in the Special Care Unit.

(d) Some consumable reinforcers (i.e. food rewards such as sweets) may have to be ruled out because the severely retarded child has some metabolic disorder such as phenylketonuria or coeliac disease for which a therapeutic diet has been prescribed.

(e) It is difficult to automate the supply of consumable reinforcement for a child who is unable to feed himself properly.

(f) While normal and moderately retarded children matched for mental age display similar preferences between certain incentives (Tyrell et al., 1963), some severely retarded children exhibit paradoxical reactions to what would normally be primary reinforcers — for example Rice (1967) had one patient for whom sweets and peanuts were aversive stimuli. In a recent article Rice draws attention to unexpected individual differences in the likes and dislikes of his subjects. One severely retarded girl responded at fairly high rates in order to secure the playing of one particular Tommy Dorsey record but threw tantrums at the sound of classical music. Another subject reached his highest peak of performance when his responses resulted in turning *off* taped stories for children. A six-year-old vegetative patient showed a decided preference for slides of the Venus di Milo as opposed to scenes of Yellowstone Park.

Despite all the difficulties in applying operant techniques to severely retarded children, there have been successful applications in such areas as self-feeding (Zeiler and Jervey, 1968), washing and dressing (Girardeau and Spradlin, 1964), toilet-training (Hundziak et al., 1965), and, above all, discriminatiou learning. Some studies of discrimination learning which were carried out by the psychologist staff of the Cork Polio and General After-care Association will now be described.

(i) Learning curves which purportedly show the relative difficulty of different types of discrimination learning are shown in Ellis's Handbook of Mental Deficiency. Some of these curves are based solely on the performances of those who *succeeded* in a task. Accordingly Davison, Harris, Murphy and McHugh decided to investigate the relative difficulty of colour, position, and shape discrimination using easy tasks and continuing trials until all subjects reached the learning criterion.

Three one-inch-cubes coloured blue, green, and yellow respectively were used in the colour discrimination experiment. In the position discrimination task three red cubes were employed. The shape discrimination problem involved a semi-circle, a triangle, and a square. On each trial the correct response was reinforced by a sweet pellet concealed under the appropriate stimulus. Each subject was given 25 trials per day till he reached the criterion of 9 consecutive correct responses on his particular task. Sixteen subjects (half of them mongol, half non-mongol) were used in each experiment. All 48 subjects were 'trainable' moderate retardates.

Colour discrimination required nearly twice as many trials to establish as shape discrimination which in turn was a little harder than position discrimination. On no task were there significant differences in learning ability between the mongol and non-mongol retardates. This research obviously needs to be extended to the learning of other colours, positions, and shapes before any general pedagogic implications can be drawn.

(ii) A posting box is a piece of apparatus used to teach children to discriminate shapes. In one common form it consists of three compartments into which square, triangular, and round blocks can be sorted by dropping each through an appropriately shaped slot in the lid. It is easy to construct a posting box of type A in which the relative dimensions of the slots are such that misclassification of a stimulus object is feasible so that, for example, a triangular block could be dropped through the circular opening into the wrong compartment. It is also feasible to construct a posting box of type B in which the dimensions of the slots are such that each hole will only admit those stimulus objects which correspond to it in shape. Type A allows but type B bars erroneous postings of discriminanda. Type B's design of course cannot prevent the learner from trying to force a block down the wrong hole, but it does ensure that no such behaviour meets with success

It was therefore hypothesized that misguided attempts to shove stimulus objects into openings of the wrong shape would be eliminated more rapidly when a posting bax of type B rather than one of type A is used. One group of ten children with a low-moderate degree of mental handicap was randomly assigned to a type A sorting task while another group of ten children with matched I.Q.'s learned to sort objects into a posting box of type B.

As predicted, the second group took significantly fewer trials to achieve the criterion of 6 successive correct postings without preliminary overt erroneous moves. After attaining the criterion all subjects were given an additional 36 trials on whichever posting box they had not previously used. Both groups performed equally well on these extra trials, thus demonstrating that the original learning was not task-specific.

(iii) Strauss (1947) suggested that brain-injured children would learn best if taught in distraction-free surroundings. Studies supporting the Strauss viewpoint are cited by Browning (1967), while Ellis (1963) adduces contrary evidence. Whether or not Strauss is right in maintaining that brain-injured children are more distractible than other mentally retarded children, it remains a possibility that both types of retardates are more easily distracted than normal children of like mental age. In visual tasks a great deal may depend on whether the irrelevant stimuli, like Browning's flashing lights, appear on the periphery of the subject's vision or are in the centre of his visual field, as in Ellis's experiment in which each subject had to perform his task in front of a mirror

Murphy and McHugh examined the effect of a different kind of "central" distraction from that used by Ellis. Their subjects were two matched groups each consisting of ten ambulant children with I.Q.'s below 35. In a small bare room with no outside view the children were individually confronted with a chipboard screen behind which the experimenter sat and from which projected towards the child two tins differing in colour, shape, and size.

Choice of one particular tin was always rewarded — whenever a child opened the lid he found a sweet inside. On successive trials the relative position of the tins was varied in accord with the corrections by Fellows (1967) of the traditional Gellerman sequences. For ten children (the "non-distracted" subjects) the screen from which the tins protruded was a uniform grey. In the case of the other ten "distracted" children some coloured pictures of animals were stuck to the screen.

The "non-distracted" group vindicated Strauss by taking significantly fewer trials to reach the learning criterion of ten successive correct choices.

Having found that visual distraction adversely affects discrimination learning in low-moderate and severe retardates, we thought it logical to go on to examine what (if any) effect auditory distraction has.

The task set the children in this next experiment was a size discrimination one. If a given child pushed aside, say, the larger of two red circular wooden blocks presented on a tray, it found a sweet in a recess underneath. Testing continued until the child made the correct response on 10 successive trials. The relative positions of the large and small blocks were randomly alternated throughout. The 36 moderately retarded children studied in this experiment were divided into two groups matched for mental age and sex. A tape recording of typical classroom noise was played while the 18 moderate retardates in one group were being individually trained in the size discrimination task. The 18 members of the other group were tested one at a time under *quiet* conditions. Contrary to what one would predict from the Strauss hypothesis there was no significant difference between the groups in the number of trials they required to master the problem. Such slight difference as there was between the groups in this respect ran in the opposite direction to the Strauss hypothesis for the children in the group subjected to taped distracting noises tended to learn the tasks slightly more quickly than did the children tested under conditions of quiet.

The implication of the two experiments just described is that in low-moderate and severely retarded children *auditory* distraction such as normal classroom noises does not adversely affect ability to learn simple discriminations, whereas even a little *visual* distraction does markedly impair learning ability.

(iv) When a child has learned to consistently select one of two stimuli for reward, he can then be trained to select the other stimulus instead. For example, if he has learned to pick the larger of the two objects he can next be taught to select the smaller. This second stage is called discrimination-reversal learning. It poses very interesting theoretical problems and has practical implications for the training of the mentally retarded.

The great Russian psychologist, Luria, is supported by O'Connor and Hermelin (amongst others) in claiming that children who are unable to express in words their eventual solution of a discrimination learning problem will find it *easier* to solve the reverse problem, than will those children who could verbalize their original solution. Luria and O'Connor argue in effect that it should be easier for a child to unlearn a perceptuo-motor discrimination response than to unlearn both a perceptuo-motor response *and* an associated verbal response.

For various reasons my colleague Declan Roche and I were not altogether convinced by Luria's theorizing nor by O'Connor and Hemelin's experimental evidence in support of it. So we carried out the following experiment to check Luria's hypothesis:—

We used a modified form of the Wisconsin General Test Apparatus to teach children to discriminate colour.

Our version of the apparatus has a one-way mirror separating experimenter and subject and a sliding tray for the presentation of stimuli. In the tray are two square food wells. Two sliding covers run in tracks over the foodwells. Cards displaying learning stimuli can be attached to the upper surface of the wooden slides by inserting them under a perspex sheet (which keeps them clean). The coloured stimulus cards were 8" square. One was red, one blue. Illumination was held constant throughout the experiment.

Sliding the appropriately coloured square forward uncovered the well or recess containing a sweet reward. Choice of the other coloured square was not rewarded. The subjects in this experiment were 15 children of normal intelligence who had speech and 15 severely retarded children who had no speech. The groups were matched for sex and mental age (average M.A. 2½ years). Although both the normal and the severely retarded children learned equally readily which of the two coloured stimuli indicated the presence of a sweet reward underneath, the normal children proved much superior on the reverse task when it was choice of the other colour which was rewarded.

	Normal group (able to speak)	Severely retarded group (without speech)
Average no. of trials to learn original task to the criterion of 6 consecutive correct choices.	72	71
Average no. of trials to learn the reverse task to the same learning criterion.	34	51

Our finding that the non-speaking severe retardates were worse than the normal children on the reverse discrimination task throws doubt on Luria's hypothesis. Instead it lends support to the Lewin-Kounin concept of rigidity and perservation of behaviour amongst retardates. Severe retardates are less able than normal speaking children of like mental age to inhibit a previously acquired perceptuo-motor habit.

In a supplementary investigation using 15 mildly and 15 moderately mentally handicapped children, those children in both groups who were able to verbalize their solutions mastered a size-discrimination problem and its reverse significantly more quickly than did non-verbalizers.

The result of this study, like that of the previous one, casts doubt on Luria's theory. According to our findings, verbalization of the solution of the perceptuo-motor problem seems to be an *aid* rather than a hindrance to the solution of the reverse problem.

TO SUM UP:—

The series of experiments I have described suggests that:

(1) Low-moderate retardates can be taught to discriminate position slightly more easily than to discriminate shape. Colour discrimination, however, is much more difficult for them to learn than is either position or shape discrimination.

(2) Learning to sort objects by shape can be more efficiently taught to low-moderate retardates if the posting box is so designed as to prevent sorting errors occurring.

(3) Even minor *visual* distractions impair discrimination learning by low-moderate and severe mental retardates. Classroom noise, however, does not disrupt discrimination learning in moderate retardates.

(4) Contrary to Luria's theory, ability to verbalize the solution of a perceptuo-motor discrimination problem does not hinder but instead facilitates the learning of the reverse discrimination by mildly, moderately and severely mentally handicapped children.

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Francine Robaye, Brussels

THE USE OF AUDIOVISUAL AIDS AND AUTOMATED TEACHING DEVICES IN PRE-SCHOOL EDUCATION

Children should only start to learn the basic skills like reading, arithmetic, and writing, when they are ready for them.

School-readiness has three different aspects: affective, social, and instrumental. For the child, this implies that he must have a willingness to learn reading, writing and calculating; that he is able to leave home for a certain time and spend part of the day among children with whom he'll have to collaborate and to share; and that the child already possesses the perceptive and verbal equipment which makes learning possible.

Let us first consider the non-handicapped child. Non-handicapped children reach school-readiness at varying ages (approximately between 5 and 7) because within a certain range of years a normal child has its own rhythm of development. But by law all children have to begin school-training at the same age and generally at 6. Consequently a lot of children cannot get adapted to primary education and are finally considered as backward or defective.

In any social class you can meet children of 6 or 7 who have difficulties of depth perception, rhythm troubles, a lack of visual and motor coordination, insufficiency in lateralisation, etc. Moreover, many children start primary education with an evident handicap which is not due to a real intellectual deficit but to their lack of culture and to disharmony between home-education and school-teaching.

Those children are in a minority. A period of pre-school training enables children of all social classes to get acquainted with activities, information, and problems which are automatically within the reach of the children of the upper classes.

It is possible in the pre-school period to detect instrumental difficulties and to resolve them with appropriate exercises in order to prevent difficulties in the acquisition of basic skills. Pre-school training can also make the child familiar with life in a small community that has its rules and its constraints. Affective weaning from home will then take place more progressively.

Let us now consider the situation of the small cerebral palsied child at the age of 5 or 6 and let us turn our attention only to those children whose behaviour shows that on the whole they have no severe intellectual shortcomings.

Pre-school training

All cerebral palsied children under 6, even when apparently intellectually normal on the whole, get less than average marks in the fields of body-knowledge, depth perception, perceptual analysis, perceptual and constructive activity, organisation of time, etc. Furthermore they are all backward in speech compared with average children. All young cerebral palsied therefore have a generalized deficiency in their perceptual, constructive and verbal development Hence it is not feasible to make them start learning reading, writing and calculating even if they have a normal I.Q. and are of the age at which non-handicapped children begin primary education.

Moreover, because of their motor and often related sensory handicaps most of those little cerebral palsied children have been dramatically limited in their explorations and manipulations. Sometimes they have been living confined to their bedroom or to some rooms at home or in an institute. The cerebral palsied child who suffers from a severe motor or related sensory handicap is in a state of experiential and cultural deprivation which is much more serious than that of any child living in an uncultured environment.

It is therefore obvious that a very carefully organized pre-school training is essential for all cerebral palsied children. This pre-school training must be planned according to the three following rules:

1. It can't be started too soon. We still do not know what kind of results might be obtained if re-education began very early but we have good ground for believing that we could avoid a lot of irreducible deficiencies and subsequent difficulties if we attach as much importance to perceptual re-education as to motor re-education during the first years of life. To-day we shall only consider the systematic training that can be done from the age of 5 or 6, though we do not think this should be the real beginning of re-education.

2. You can't make up for lost time! We don't believe much in the effectiveness of re-educational treatments of an instrumental handicap when the child is old.

3. It is no use to begin to teach the basic school skills if the gaps in the elementary perceptual and verbal development have not been filled.

Parents often wish their handicapped child to be on the same level of learning as their other children or those children they see around them. It is necessary to make them understand that too much haste would be harmful and that it is better to wait one or two years longer to start primary education if the child is not ready in its instrumental development, its information and its interest.

Since his deficiencies affect all fields (perceptual and verbal development, social experience, information), a lot is to be done before a handicapped child begins primary education and we must try to make the task easier in the child's interest as well as in that of the staff in charge of its reeducation. Hence we have not only taken into account the deficiencies that must be re-educated but also motivation and learning of social environment.

Motivation

1. Let us first consider the problem of motivation. The handicapped child has much to learn, must do a lot of exercises of all kinds. Improvement is often indiscernible. So we must find means of making his task attractive and making him wish to go on.

2. We believe in the strengthening and positive value of the motor response; in our opinion, very few concepts can be learnt in any field if the pupil has no opportunity of giving a motor response.

3. Let us now come to the contents of pre-school training. Usually the cerebral palsied child is not affected in only one single aspect of development. He suffers from various "related deficiencies" in greater or lesser degree. We aim at attacking the related deficiencies in a converging manner. We feel that most methods of re-education neglect the integration of the different functions; we noticed for instance an insufficient integration of the perceptual and verbal

activities. Likewise there is no integration of the graphic and perceptual constructive manual activities and the global body-activities. None of the existing methods entirely succeeds in its attack on the related deficiencies just mentioned. Moreover, the physical handicap of some children we treat is so severe that we cannot teach the exercises just as they are recommended.

Our method is novel because of its greatest possible integration of the exercises meant for the various functions and because of its use of the most diverse methods of responding; it is original also because of the technical means we have perfected in order to facilitate the task of the children and the educator. We have not thought it necessary to "invent" new exercises as a lot do already exist all over the world. We have only innovated in certain neglected fields (as for instance the field of sound) and in certain cases we have improved progressivity. The exercises with which we were acquainted mainly referred to visual perception and visual and motor co-ordination. We did not want to neglect the fact that learning to listen is also very important in improving language and the capacity for learning of children affected by brain injury. But becoming aware of oneself and of the outside world, space orientation, body orientation and organisation will be realised not only through sight and hearing but also through touch and movement.

Now as to our manner of proceeding:

1. We have always been careful that any child, however severely handicapped, should give a motor response; this motor response varies from the mere pressing of a button and switching on a small red or green light (according to the right or wrong answer) to global movements of the body and moving in the room. It must be possible for the child to answer by means of gesture, mimicking or manipulation. According to his physical capacity, he will use global movements or more refined ones. Those movements will be made with the whole body or, when that is impossible, with the arms or even by nodding or moving the eyes.

2. With regard to the progression of the exercises, we follow the stages of the mental, perceptual, as well as verbal, development of the child between 3 and 7. Yet, in that field we have not been very strict. We do not want progression to be rigid. In our opinion it is sometimes advisable to retreat from certain obstacles and to come back to them afterwards. Thus, motivation remains high. It is advisable to avoid as much as possible letting the child meet with failure or stagnation. It is also in order to increase motivation that we tried to set out the exercises under various forms even when they are meant for one particular function.

3. Finally, we have tried to improve the social contact of the young handicapped child. Many methods of reeducation are meant for one individual case rather than a group and we think that is bad for the child. Usually the young handicapped child finds it difficult to come into contact with his environment and he often gives expression to strong egocentrism. To correct this tendency we have endeavoured to find exercises that need the collaboration of many pupils. We keep the individual exercises for cases that are especially complicated.

We come now to the description of the work we did this year. We shall only speak of a single aspect of this work, namely what we do in a room where we have audio-visual and automated equipment. This is not the complete preschool training provided. We shall almost neglect the aspects of "observation" and "experience of everyday life"; we shall be mainly interested in perceptual and verbal re-education, trying at the same time to remain as closely as possible in contact with the entire reality. The programme shown in the following slides is the work of a team consisting of myself, an electronics expert (who built the apparatus) and Mrs. Leborne (our highly experienced ergotherapist). It is thanks to Mrs. Leborne's imagination and skill that so many appropriate exercises could be prepared. The training room is meant for at the most 8 pupils. Every pupil has a desk that is adjustable in height and before which he can sit even in a wheel-chair.

This desk has 2 recesses on the left and a set of 6 recesses on the sight.

At the bottom of each recess is a conducting plate which you touch with a stick or with your finger to switch on a small light (corresponding to one of the lights of the teacher's desk which thus records the response). Any child, however severely handicapped, can make that gesture. The child can thus give an answer, having chosen between 6 different possibilities. If the answer is right, the teacher switches on the green light which is to be found above the desk; if the answer is wrong, the red light glows. The question the pupils must answer with one of the 6 answers proposed appears on a screen in front of the class-room.

The left side of the desk corresponds to a second way of responding. When the pupil touches one of the two recesses, he operates a giant pointer which moves on another projection screen in front of the class-room. The pointer turns around an ellipse. Answering by means of pointing is easier for the more handicapped. Some of them can even operate the pointer with their chin.

Third possibility: On the desk can be fixed a magnetized board. On that board, the pupils can construct their answer to a problem which appears on the screen.

Fourth possibility: On the magnetized board you put a sheet of transparent mica and between the mica and the board you introduce any model sheet to copy or to finish. After the exercise you rub out the traces on the mica.

Fifth possibility: On the desk you fix a thin wooden board with regularly pierced holes. The pupil has coloured pegs and a certain number of elastic threads. Even when the child is not able to hold a pencil in his hand he can copy the model or draw some lines by command.

Our equipment allows the exercises to be varied and attractive even for severely handicapped children. But all those who are able to act or to move do exercises that bring their whole motricity into action.

Our basic principle is to avoid division in re-education, to avoid cutting it off from reality or reducing the ways of answering; let us mix the exercises, repeat them, do them again and again in various ways, check if the pupils remember them.

Our aim always remains to train the child to reach functional independency as well in the activities of everyday life (such as finding one's way, moving, dressing, writing) as in the more intellectual or school activities (such as getting acquainted with spelling, reading, calculating and even with geometry and the sciences). The child must learn to juggle first with plain notions and then with ideas and associations that are more and more intricate.

Have we reached the three goals set earlier:

(a) to maintain high motivation,

(b) to improve perceptual functions,

(c) to develop social relations?

We think so, at least for points (a) and (c). Children like to work in the automated class-room. It prevents them being deprived of contacts with others during re-education sessions. The only thing you have to do is to match the members of each group for their level of perceptual development.

In the class-room there is no noise nor bright lighting. Attention is focussed on the screen or on the desk. Responses are immediately reinforced. Numerous exercises may be done in a short time. All this is good for the cerebral palsied child. But do their perceptual handicaps improve? It is too soon to answer this question scientifically, but we feel sure the answer will be yes.

Bernard Z. Friedlander, U.S.A.

AUTOMATED TECHNIQUES EMPLOYING AUDIO/VISUAL REINFORCEMENT IN PERCEPTUAL EVALUATION AND BEHAVIOUR DEVELOPMENT WITH RETARDED AND DISABLED INFANTS AND CHILDREN

Children with mild, moderate, and severe sensori-motor disabilities suffer a bewildering array of clinical behavioral problems that can be assigned to many different diagnostic and etiological categories. Their disabilities impede or disrupt efficient adaptation to environmental demands and opportunities in virtually every domain of life activity, from the simplest self-care to the intricate complexity of interpersonal relationships. Because of this diversity it is often difficult to identify fundamental building blocks of behavior and experience that constitute the primary warp and woof of adaptive capability.

Due to the difficulty of identifying fundamental elements of adaptive experience, evaluation and intervention tend to be global and non-specific. This tendency is often positively correlated with the severity of the disability. The more severely involved the patient, the more difficult it is to determine his sensory-perceptual awareness of the environment around him, and the more difficult it is to evaluate his ability to act upon his environment in an adaptive fashion

This report describes a program of basic research and clinical investigation in which semi-automated and automated methods, generically termed the P53/2172 System, are employed in an effort to systematize certain primary behavioral interactions between young children and aspects of their environment which represent either significant modes of sensory-perceptual information or significant challenges to motoric performance. When we use these systems to evalute the integration of sensory-perceptual inputs we make the response requirements of the patient's operant task as simple as possible. Then we exercise our best ingenuity to provide regulated response requirements that tell us something worthwhile about the patient's ability to perform progressively more demanding motor operations.

In either application, the tasks themselves and the feedback stimuli they generate are the reinforcers that sustain the activity. The numerical records of the patient's performance give an evaluation of his ability to recognize or discriminate specific stimulus properties, or his ability to execute specific tasks. In a number of cases, patients' records in multiple sessions over a period of days or weeks offer strong suggestions of specific performance improvement as a result of practice. Despite the encouragement gained from such favourable results, the emphasis in the present phase of this work is on using PLAYTEST procedures as evaluation techniques. No claims are made that these procedures constitute a form of rehabilitation therapy, although it is probable that they do.

In the limited time available it is not possible to give a detailed rationale for the many types of evaluation procedures that have been developed. Perhaps the best overview can be obtained by describing various techniques in terms of specific situations, illustrated with photos of children in actual test conditions and with representative data.

I will deal first with the general area of sensory-perceptual evaluation.

A basic problem that frequently arises in evaluating very young or disabled children's sensory-perceptual functions is to examine the child's ability to distinguish specific properties of critical stimuli. This problem is not just a matter of measuring psychophysical sensory difference thresholds, as might be dealt with in a classical psychological laboratory. The problem is to determine if a child recognizes differential stimulus properties as they occur in some approximation of his normal encounters with the environment, in a feedback loop involving his own behavior. As we conceive of sensory-perceptual experience, the individual is not simply a passive receiver of stimuli, but an active agent participating in a reciprocal interchange with his environment.

The first slide illustrates a specific evaluation procedure involving one of many different types of stimulus values. A two-year old retarded boy is seated in front of two switches on the PLAYTEST panel attached to an ordinary playpen. When he touches one switch he can turn on a single stroke of an ordinary doorbell chime. To make the chimer ring again, he must let go of the switch and press it again. When he presses the other switch, he turns on the sound of a church organ that plays a scale continuously for as long as he presses the switch. An automatic timer reverses the position of these two feedbacks from switch to switch at regular intervals and an electronic interlock prevents both feedbacks from sounding at the same time if he should press the switches simultaneously.

This sounds like a very simple situation, and it is. But it constitutes a fairly sophisticated information processing and behavioral control problem for a young child — especially for a retarded child. If he is to maximize the sound of the chime he must make lots of short responses. If he is to maximize the sound of the organ music, he must make relatively few but long responses. Then, he has to change his response pattern on each switch when the positions of the feedback are reversed. In this setting the positions reversed every 3 minutes.

In effect, we have a situation that requires the child to formulate a simple Piagetian assimilation schema in distinguishing the different properties of the sounds, and a compound accommodation schema in making the appropriate response on each switch — and then shifting these patterns from switch to switch when the feedbacks shift position.

The beauty of this basic situation is that it can be used with any auditory, visual or other stimulus value that can be recorded on audio or video tape, on film, or otherwise be regulated by electrical switching circuits. Within these constraints, there is virtually no limit to the range of sensory-perceptual variables that can be put into the framework of an evaluation procedure.

The second slide refers to an initial 36-minute session by a 29-month old severely retarded boy. This boy was extremely passive and essentially untestable by orthodox means. His play and self-help activities were negligible and he responded to strangers and to familiar attendants with the same blank, expressionless gaze. Yet when placed in the PLAYTEST playpen he reached out for the blinking red lights inside each switch and, as we see in this graph, almost immediately began a sequence of exploratory manipulations that led to a rapid solution of the psychological, information-processing problem. When he finally lost interest in the knobs and the feedback after more than a half-hour of almost continuous play, he had developed an efficient pattern of relatively short, rapid responses to turn on the chime and relatively long, infrequent responses to control the scale. Despite all prior observations of this child's severe retardation and his untestability, it was obvious that he could interact with environmental information and participate in a feedback loop in an attentive and discriminative way.

This basic evaluation paradigm has proved to be especially valuable in studies related to sensory-perceptual aspects of language functioning. For example, we have found that normal children in the 12 to 18 month range give remarkably discriminative PLAYTEST records indicating preferred levels of redundancy and repetition in speech samples consisting of selected audio tapes of stories and the rapid flow of normal conversation. These extensive behavioural records are important for at least two major reasons. They show the babies are listening attentively to the speech samples, and they show that the infants are responding differentially to the rather fine-grained stimulus properties of individual words and phrases. This work with normal children raised the question whether the same techniques could tell us anything about listening performance in retarded children with no functional speech.

The third slide shows the results of a 13 day study with a 2.5 year old severely retarded Down's syndrome boy. He was tested with a PLAYTEST unit attached to his crib while he was in medical isolation due to an infection. Time is too short to make a full analysis of this record, but two aspects of it are especially noteworthy. First the boy operated the PLAYTEST switches to produce the voice feedbacks at the rate of nearly 1,000 seconds per day. This in itself is a remarkable finding from a boy who showed little or no responsiveness to the purely vocal aspects of ordinary social encounters. Second, note how far the two curves diverge, indicating a very clear discriminative preference for the low repetition speech sample that repeated on a cycle of 65 seconds, as opposed to the high repetition sample from the same speaker that repeated on a cycle of 5 seconds. This record follows the general pattern we associate with relatively advanced stages of preverbal language development in normal children. It suggests a hitherto unsuspected degree of listening sophistication in a child whose language development was otherwise regarded as extremely delayed.

Can we tell whether a child is responding to speech itself or to some other stimulus properties with higher arousal value? We had an excellent opportunity to investigate questions like this with another severely retarded child with no functional speech. We tested this boy with audio and audio/video feedbacks over a period of several months when he was restrained in his crib by an exceptionally confining post-surgical traction apparatus following bilateral reduction of congenitally dislocated hips. The fourth slide shows how closely constrained the child was by his traction unit. He was among the most severely disabled children in the institution, differing from the children already described only in that he was outgoing and very sociable by temperament as compared with their extreme passivity and withdrawal. Over a 10-day period this child had a choice between tape recordings of a gay and happy song from the Broadway musical show "Music Man" and a male voice speaking to the boy by name in a calm and friendly way. It is unquestionably true that the song, "The Sadder But Wiser Girl for Me" sung by Robert Preston, had far more sheer stimulus value of a happy, non-frenzied kind than the steady, possibly monotonous voice you are now listening to. These data show there can be little doubt that the boy clearly preferred to listen to the normal speech rather than the singing. This again suggests a degree of linguistic "appetite" and development his retardation made it impossible for him to demonstrate through the medium of productive language.

The sensory-perceptual evaluations described thus far have dealt with stimulus values that are qualitatively specific but quantitatively imprecise. Let us now consider one further example which is more precise and possibly more powerful in its implications for future studies:

A child sits in front of a closed circuit TV monitor incorporated into a PLAYTEST system which he controls by operating a single two-choice stick switch in either of two directions. The switch is rather like a floor-mounted shift lever on a car that can go only forward or backward. Whichever way the child pushes the switch, the same picture appears on the TV screen, but the two positions of the switch regulate different properties of the sound track. We are presently working with the stimulus variables of sound intensity, sound frequency spectrum, and signal noise ratios. The PLAYTEST circuits are designed so that the sound track can be played on loudspeakers in an open sound field, through earphones, or by a silent electronic induction loop directly into the telephone coil of a child's hearing aid. The sound variables can be controlled to an exceptionally high degree of refinement, and the children's selective responding can indicate very fine differences in audio and linguistic perception. The subjects were a group of 24 preschool children, of which six were known to suffer various moderate to severe language impairments. In four successive sessions the children were given a chance to see the TV pictures and select between four sound levels of the sound track. The subject matter consisted of edited selections from a very high quality series of children's programs. The arbitrarily established sound levels were threshold, sub-optimal, optimal, and hyper-optimal.

The children made no preferential choice when both sides of the switch gave the same, equally desirable sound level but made decisive, significant discriminative selection in favor of the optimal level sound when it was paired with sound levels that were undesirably low or undesirably high. The importance of this finding lies in the fact that the objective sound level differences were relatively slight, though the sharpness of the discrimination data showed that they entailed a great psychological distance. The most relevant difference was between the sub-optimal and optimal sound levels. The objective difference was only 10 decibels (from 68/70 db to 78/80 db) in a very noisy ambient sound environment right in the preschool where the tests were conducted.

These data emerge as a demonstration of remarkably precise sensory-perceptual self-evaluation, especially in view of the fact that the stimulus material consisted of the normal combination of speech and natural sounds occurring in an ordinary TV program, and not the pure tones ordinarily used in auditory assessment.

Such data suggests that basic behavioral and experiential constituents of young children's interaction with their environment can be studied at increasingly inclusive levels of diversity and precision. We have seen that even some of our most woefully stricken children can give us information about how they recognize and differentiate critical stimulus configurations that are deeply embedded in the organization of such complex global processes as language and speech. Methods that allow us to identify when these recognitive and discriminative capacities are working well and when they are working poorly are a powerful adjunct to orthodox means of evaluation. They increase the precision with which subordinate capacities may be ruled in or ruled out in assessing the overall patterns of abilities and disabilities. These decisions may play a significant role in planning programs of care and treatment.

For example, when a functionally mute child makes extremely astute discriminations of speech and nonspeech PLAYTEST feedbacks, or when he selects language redundancy levels in a pattern like that of a linguistically normal child, one can start on an intervention program with secure knowledge that his language input processes are far beyond the virtual zero level that might otherwise be supposed. The severely retarded boy who successfully differentiated the momentary chime and continuous scales gave a glimmer of light suggesting he was not irreversibly the passive and inert child he appeared to be. This one session of data was taken as justification for starting a major enrichment program that probably would not otherwise have been undertaken. The boy did not stop being severely retarded, but instead of remaining a totally dependent patient for the rest of his life on full custodial care, he is now an active participating member of a family in a foster home.

In summary, learning more than we have previously known about disabled children's involvement in their sensory-perceptual environment offers at least the hope if not the promise of leading to more effective techniques with which to manage and treat their deficits.

(Due to space restrictions it has not been possible to include here Mr. Friedlander's discussion of PLAYTEST procedures applied to problems of evaluation and development of motor performance).

Isabelle Wagner Taylor, U.S.A.

THE ROLE OF PARENTS AND COMMUNITY IN THE EARLY EDUCATION OF THE HANDICAPPED

Two of the most important roles which people can assume are said to be left to amateurs — that of a citizen and that of a parent. Difficult though it is to be a good parent to a normal child, the role is even more complex and demanding when the child is handicapped.

Preschool needs are basically the same for the normal and for the handicapped child. I would like to discuss a few of these needs and illustrate how they are being met for preschool handicapped children through co-operative efforts between parents and community agencies. The examples will cover a wide range of efforts, including those undertaken primarily by individual parents or organizations formed by parents, the programs and experiments of voluntary associations other than parents' groups per se, university-centred or hospital-centered research programs, and special provisions made possible by the direction and support of government agencies — federal, state, municipal, and county, and usually a combination of these. It is evident that parents are usually unable, emotionally or intellectually or socially or financially, to meet all the needs of their handicapped child without aid of some kind from the community.

Five Major Types of Needs

There are five major types of need I wish to discuss: (1) health and medical and welfare needs; (2) the need for cognitive stimulation; (3) the need for warm, trusting relationships with adults; (4) the need for social experiences and first steps leading to greater independence from the home and parents; and (5) the need for understanding and acceptance, both for the handicapped child and for his parents who face many special problems in rearing him.

Good nutrition is particularly important in the first few years of growth, since the brain reaches 80% of its adult weight by the age of three whereas the body reaches barely 20% of its adult weight by that age. Permanent mental and physical damage may result from inadequate nutrition in these early years. Dr. Moises Behar, director of the Institute of Nutrition of Central America and Panama, calculates that 300,000,000 children in the world are in danger of impaired brain growth resulting from nutritional deficiencies.

Efforts to make health and welfare services available to the handicapped in the U.S. and to organise and integrate them more effectively, are illustrated by the Travelling Child Development Clinic Project organized under the auspices of the Children's Hospital in Los Angeles, with a focus on diagnostic evaluation of the retarded preschool child and on parent counselling. This project is based on the philosophy that home care is best for the child, his family, and the community. A team of professional personnel visits a community on request and demonstrates how the child and his family can be helped, with the hope that the local community will be encouraged to assist the family in the ways indicated so as to keep the child in his home.

In the U.S. the parents of handicapped children should be given more information and guidance concerning the medical and health needs of the child, and the services that are available for him. Medical Schools need to include more specific instruction concerning the nature and signs of various kinds of early handicapping conditions, plus information as to what could and should be done for the child in early childhood. They also need more understanding of the psychological meaning of handicaps in the young child. There is also need for a better integration of clinical services, research, and training to replace the present fragmentation of professional services that makes it possible for parents with a handicapped child such as one with a hearing impairment to get several different evaluations, diagnoses, and recommendations.

Medical research is providing more and more information about the nature, care, and prevention of handicapping conditions. Our government-sponsored National Institutes of Health conduct numerous projects of this kind. Such research may also be university-centered or hospital-centered. In one Johns Hopkins Collaborative Project, 1,350 pregnancies were followed, about 10% of which had been affected by a rubella epidemic. Only a relatively small percentage of children from pregnancies affected by the rubella epidemic prior to the 16th week appeared entirely normal through a year or more of follow-up. About 250 of these rubella-affected young children are currently being followed up in the Johns Hopkins Hearing and Speech Center.

Health needs and the need for intellectual stimulation and a variety of learning experiences may be met in the same program. Less than two years ago a U.S. Federally aided program of Parent and Child Centers was started to meet the needs indicated by Head Start Program experience. The PCC proposal was made by a Task Force on Early Childhood Education set up by President Johnson in 1966, with the purpose of establishing centers to demonstrate what could be done to prevent developmental deficits by helping parents both before and after their babies were born and by providing comprehensive health, education, and social services for infants and toddlers. As yet only 36 communities are involved. Each is given a planning grant for a six-month period before being given operational funds, and lays the groundwork for the program of services. The policy advisory committee that succeeds the original planning committee must have at least half its members who are PCC parents or neighbourhood residents.

Experimental Programs

A move in the direction of providing broader learning experience for the young child is represented by the 1968 Handicapped Children's Early Education Assistance Act. This Act authorized the Commissioner of Education to make contracts with and grants to public and private agencies for establishing preschool and early education programs for the handicapped, with 90% of the funds provided by the federal agency and 10% by local agencies. All disabilities and all age groups from birth to six years of age are included. Diversity of approach is encouraged in these 75 experimental programs scattered over the country.

In the U.S. federally sponsored Parent and Child Centers program, local people in many of the projects are trained to become infant educators who go into homes, work and play with the babies and toddlers, and teach mothers how to do the same. They also help parents to obtain stimulating toys and materials for the children, teach the parents the value of talking with their children, and help them to get library cards and story and picture books to share with their children. This home-based approach has been more popular than travel to group meetings because parents might have difficulty in getting to a meeting. In addition to this home visiting there is a center where parents may bring their children for group activities or care, though so far only a few of the experimental centers have day-care arrangements.

Some of the same kind of help and advice given by the teacher of the handicapped child when he enters the regular school could be given to parents of preschool children. Ernest Siegel's recent book on "Special Education in the Regular Classroom" includes many suggestions as to how the teacher can help the parent to carry over into the home procedures for motivating the handicapped child and adjusting expectations to his capacities. Such suggestions could just as suitably be given to parents of preschool children.

Meeting the need for early intellectual stimulation has been the goal of many preschool programs for handicapped children undertaken under private auspices. In the Institute of Rehabilitation Medicine in New York City there is now a special preschool center for both day and in-patients at the Institute, for about 18 children with a variety of disabilities. The center was carefully planned in terms of the amount and arrangement of space, with experimentally designed furniture and equipment which were manufactured specifically for this program. Easels and sandtables were designed to facilitate use by armless children who manipulated materials with their feet. At the Montevideo

(Uruguay) School for Mentally Retarded Children, Mrs. Lorenzo has organised a program in which parents bring in their preschool retarded children to discuss the ways in which they can use special toys and equipment for them at home and give them maximal stimulation. At the Japan Oral School for the Deaf in Tokyo increased emphasis on the preschool child, with mothers bringing in their young children for examination and guidance, has accelerated the learning of these deaf youngsters to such an extent that they are able to return to normal classes at an earlier age.

Assistance in adapting the home environment to the needs of the handicapped child is given parents of profoundly deaf children under 3 years of age by the Bill Wilkerson Hearing and Speech Center in Nashville, Tennessee. A distinctive feature of this program is the use of a model or demonstration home in which parents are taught how they can help the child to develop skill in attending to sound and speech during the course of his normal activities at home in the early years before he is able to take part in programs outside the home. Also included are once-a-week sessions in the child's home, and monthly group meetings of the parents. In a national conference on the education of the deaf held in Colorado in April 1967, early detection of hearing loss with more valid and reliable testing techniques was stressed as important, perhaps even prenatal testing, along with language stimulation, parent guidance and counselling, and preventive and therapeutic medical services.

Carefully controlled university-centered research programs can also provide parents with the understanding and experience they need in making suitable provisions for the child's needs at home. A year and a half ago the Crippled Children's Division of the University of Oregon Medical School initiated a behavioral research program designed to train parents of retarded children to observe their child's behavior and their own more accurately and objectively; to eliminate the problem behavior at home; and to build up the child's appropriate behaviour in areas such as self-help, verbal communication, and social and emotional reactions. Observations were made in both a clinical setting and the home setting, with the application of operant conditioning techniques in changing the child's behaviour.

"Talking Typewriter"

Much research is now being conducted in attempting to use what is called operant conditioning and other forms of behavioral modification with handicapped children such as the mentally retarded and emotionally disturbed. The psychologist Omar Khayyam Moore invented the "talking typewriter" about eight years ago, and Dr. Mary Goodwin, a New York pediatrician, was apparently the first person to use a duplicate of this machine with autistic children. As of a year ago there were 74 manufactured copies of the talking typewriter operating in 25 different locations, chiefly in city schools, mental hospitals and homes for retarded children, with dozens more of the machine on order. The cost of the machine — about $40,000 — limits its use, although many efforts have been made to incorporate its basic principles into simpler and less expensive machines.

In providing adequate learning experience for the preschool handicapped child as for the non-handicapped child we need first to be certain about the goals of these provisions. What do we want to achieve? How do we expect the child to develop? We must be sure that we are not projecting our own adult ambition into this period, and over-emphasizing the importance of formal instruction as in early reading and writing and arithmetic. I have been greatly concerned about the emphasis in the U.S. in recent years on the possibility of teaching formal academic skills to preschool children, and urging parents to attempt this, as illustrated by aids which claim that the commercial concern involved can raise the child's IQ, or teach him to read at the age of three or four. In general the Russians have crystallized and implemented the goals of their preschool education much more explicitly than have other countries. It is interesting to see the emphasis they give to group living and social co-operation from early infancy, for they do not accept as do most western educators the inevitability of certain kinds of egocentricity and inter-personal conflict. As Bronfenbrenner comments, we may not agree with the objectives and methods used in Soviet preschool education, but a careful examination of these, and raising the question as to how we might do things differently would be very helpful in clarifying our own aims and values.

Another need, for warm and trusting relationships with other persons, either as a substitute or as a supplement for relationships with the parent, may first be met by means of a baby-sitter, although there may be special problems in finding someone willing and able to give temporary supervision and care to a handicapped child. The Easter Seal Society has undertaken a successful program of training high school boys and girls to baby-sit for young cerebral palsied children. In many instances the mother had not been able to get away from the children for weeks or months or even years at a time.

Secure Relationships

The establishment of secure relationships with persons outside the family circle is often especially difficult to accomplish in the case of the institutionalized child, to whom an overworked staff can devote little individual attention. A foster grandparents program is one attempt in this direction. The children cared for in the Medical and Emotional Treatment Unit of the Summit County (Ohio) Child Welfare Board are of preschool age, and most have physical, mental and/or emotional handicaps. All are under county care as dependent or neglected children. The foster grandparents come to the children for four hours a day as part of a demonstration project sponsored by the Office of Economic Opportunity and the Administration of Aging of the U.S. Department of Health, Education, and Welfare, to give employment to specially selected needy persons over 60 years of age.

Another experimental program is one in which 40 juvenile offenders 11 to 18 years of age from the Minnesota State Training School for Boys have been acting as "older brothers" for some retarded boys, ranging in age from early childhood to 14 years, in a neighbouring institution. At first the boys were skeptical, but their attitudes soon changed. They go to the institution in groups of eight, and each boy spends several half days a week initiating play activity, teaching games, working with arts and crafts, and taking the children on field trips. One boy commented that it made him feel "just like a parent."

The "Times Educational Supplement" recently carried an account of a continuing project in a London suburb where the boys and girls from a local high school have designed and made hundreds of different aids for handicapped children in a nearby residential school for handicapped children. The aids are made after consultation with the school's occupational therapist. Products do not duplicate those on the market, and include glove puppets, toys and dolls, crutches, walking frames, adapted tricycles, and jigsaw puzzles with pins attached to the pieces for easier handling. The personal relationship established between the handicapped children and the normal adolescents were probably as important as the special equipment. This reminds me of a visit I made once to a center for preschool cerebral palsied children on Lake Como in Italy, where boys from a nearby institution for delinquents made special toys and equipment for the children, and became very much attached to them.

The need for social experiences beyond those afforded in the home can be met in a variety of community settings. However, U.S. provisions for kindergarten, nursery, and day-care facilities are in general very inadequate for either normal or handicapped children. Of the approximately 12,500,000 children three to five years old in the U.S., less than 30% attend any kind of educational program.

In recent years special nursery schools and day-care centers for mentally retarded children have been developed throughout the U.S. to enroll children at the age of three or four. One important consideration in these projects is that as the mental age of the child is below his chronological age the effect of separation from the mother may be more traumatic than in the case of the normal child. But if one waited for the child to reach the *mental* age of three, the moderately retarded child would be six years old on admission. To meet this problem the Mental Development Center at Case Western Reserve University has established play groups for retarded children as a transitional step to nursery school, enrolling groups of seven or eight children who meet three times a week for an hour and a half, with a gradual withdrawal of the mothers from the setting in which the child plays.

Experiments have been undertaken widely concerning the integration of handicapped with normal children in the nursery school, as at Stevenage in England. In an "Opportunity Class" that meets two afternoons a week, 18 children with handicaps ranging from spina bifida to mental subnormality play with normal children.

Parents need help also in understanding and accepting the handicapped child. There are many questions which arise for them which they themselves cannot usually answer because they lack the necessary information or experience: What is the real nature of my child's disability? What is a reasonable time-table and set of goals for his development? How much like other children will he be? How much should I do for him, and how much should I encourage him to do for himself? Am I a bad parent, or an abnormal parent, because I feel resentful or angry or impatient or frustrated at times? Have I in any way been personally responsible for the child's disability? What kind of help outside the home can I expect for my child? Will I be able to afford it if it is available? What will happen to my child in the future? Will he eventually be able to marry and have children?

Too little attention has been paid to the effects, conscious and unconscious, of the handicapped child on his family. A Psychology student of mine who has a mongoloid brother recently told me that her parents are getting a divorce largely as a result of the stresses and strains introduced by this child into her home. A child's severe symptoms can make even healthy, stable families anxious and defensive. As one writer commented about the emotionally disturbed child, "His care is taxing; his behavior is incomprehensible; his conduct can be embarrassing; the medical attention he requires is costly; the social services he requires are excessive. His illness is a severe blow to the parents' self-esteem, and their feeling of guilt over having produced such a child is accentuated by the hostility and anger the child provokes. It is difficult for them to air their feelings or to separate themselves from him. Even the most mature parents worry about how to handle an emotionally disturbed child without harming him further."

Counselling Services

This need for understanding and acceptance of the handicapped child may be achieved in part by a variety of counselling services for the parents of handicapped children. Many private and public agencies in the U.S. have organized experimental programs of this kind. For nearly 20 years the Child Study Association, through its Department of Parent Group Education, has given training in parent group education to selected social workers, psychologists, educators, and public-health and hospital nurses, concentrating on the use of group discussion to meet the needs of parents in the group in a flexible way, exploring such topics as the situation they find themselves in with their children, the child's physical and emotional development, their roles as parents, and the complexity of parent-child relationships. The goals and the techniques of group education are different from those of group therapy, for the group leader does not focus on the pathology of the members or probe into unconscious motives, but directs group thinking toward the parent's actual functioning in relation to the child. Though early emphasis was on normal children, the association was eventually asked to organize special training programs and group education sessions for parents of handicapped children. It should be noted here that in the past few years there has been a spate of experimentation with various types of so-called group therapy, often considered unwise by professionals, and one must be aware of the hazards of improper handling of the fears and anxieties and guilt feelings of troubled parents. When parent organizations have initiated programs of counselling for their own members, they have usually called upon the services of experts to arrange such discussion groups.

The shortage of professional persons in the mental-health field, to give parents with emotionally disturbed children the kind of psychotherapeutic assistance they might need, has led to an experimental program in Milford, New Jersey, for training the parents themselves in therapeutic techniques. Parents of emotionally disturbed children work with their own children at home for brief periods using the principles of Rogerian child-centred play therapy as taught to them by professional therapists. The parents meet in groups of five to eight for two hours a week, starting with explanations of principles by a professional therapist and followed by demonstrations of play therapy with their children. After a few weeks each parent has a chance to demonstrate in a play session with his or her own child what has been learned, while the group and the therapist observe through a one-way mirror and later discuss the method observed. Weekly discussions and demonstrations continue even after the parents begin to practice at home, for their experiences can then be shared. Sometimes these trained parents are in turn used as psychotherapeutic aides to train still other parents, though some experts caution that good supervision is still essential.

Sharing of experiences among parents of handicapped children, for emotional reinforcement as well as for practical suggestions in working with their children, has been found to be helpful in arrangements other than group counselling. For example, there are so-called "roundabouts" or correspondence groups of parents of deaf children organized by the Alexander Graham Bell Association for the Deaf in the U.S. Each group, composed of about six parents, has a coordinator who is an educator of deaf children. The parents, whenever possible, are matched according to the age of their children, and write to each other in round-robin fashion, with the letter going to the coordinator for comments at the end of each round.

Parent counselling is often either a direct or indirect part of day-care programs for handicapped children. The day-care experience is more successful and meaningful for the child when there is parent participation, but this involvement may face deterrents such as the parents' own social deprivation and inexperience; their lack of any felt need to be involved; an actual fear of getting involved; preoccupation with their family or work responsibilities or both; an overwhelming sense of inadequacy or hopelessness that interferes with participation; and a reluctance to take on responsibility. Parents, especially the mother, may even overtly or covertly object to day-care experience for the child, on various grounds, perhaps unverbalized: there may be a feeling of rivalry with the day-care supervisor; a sense of guilt or implied inadequacy over giving the child even temporarily into the care of another; disapproval of some of the behavioral changes resulting from the child's day-care experience; possible emotional estrangement of the child from the mother; resentment on the part of an overburdened mother when changes are required or recommended in her home management patterns, such as cleaner or better adapted clothing for the child, good hot meals, and patient but time-consuming self-help procedures. Involvement increasingly concerns the father, as there is growing evidence that the child needs a warm father relationship as well as one with the mother in order to develop normally. In many families it is relatively easy for the father to slough off responsibility for the handicapped child and assume that the youngster is entirely the mother's concern, in which case the father may resist involvement in the child's care and activities both at home and in the day center.

Many problems and unanswered questions remain. One is the limitations of research conducted in this area; many have deplored the imperfections in control of variables, sampling procedures, and interpretation of findings. In studying parent-child relationships, more objective procedures for evaluating and measurement must be developed which at the same time respect the family's privacy and the delicate balance of family relationships. There is continuing difficulty in synthesizing and applying research findings, because of the flood of reported material, and the occasional abstruseness of style that makes it hard even for the professional to understand at times what is being said. There is no universally accepted solution yet for certain medical-ethical questions such as the desirability of abortion in cases where newly developed methods reveal that the fetus is abnormal, as in the case of mongolism. There is often lack of knowledge of, and concern about, the total pattern of interwoven social and community services for the handicapped on the part even of professionals, with a resultant isolation and fragmentation of services. We need to assess more clearly the goals of preschool provisions, to be sure that they represent the child's best interests and not merely the adult's preoccupations, preconceptions, or thwarted ambitions. We need to determine more objectively just what kind of provisions are best for what kind of handicapped child, and to what extent individual differences dictate the answers.

Very Rev. James Canon Bastible, Ireland

A SUMMARY OF THE REPORT (1965) OF THE IRISH "COMMISSION OF INQUIRY ON MENTAL HANDICAP"

Governments which move ahead of public opinion invite failure for their proposals. This was aptly expressed by Sean McEntee, Minister for Health, at a meeting of the Irish Medical Association held in Cork some 12 years ago. Speaking to the Chairman's address on that occasion he said: "Sean McEntee is in agreement with most of the reforms in the medical and para-medical professions put forward by you, Mr. Chairman, on behalf of the Irish Medical Association. Your endeavour now must be so to educate the public that it will bring pressure on the Minister for Health to institute these necessary reforms."

In an assembly such as this there is no need for me to emphasise how recent in origin is the modern concept of rehabilitation and particularly in the field of mental handicap. And despite the progress made in many countries I think it is fair to say that special education for the handicapped is still in a pioneer stage. If this be true in general one need not be surprised, in a newly-emerged state such as ours, that we entered relatively late into modern work for the care and education of the handicapped.

On the establishment of the State in 1922, the only institution dealing specifically with the mentally handicapped was the Stewart Institution in Dublin which was founded in 1870. But this was the product rather of 19th century thinking. The new concept of the care and education of the mentally-handicapped found its first expression in Ireland in 1926 when the Sisters of Charity of St. Vincent de Paul opened a home for mentally handicapped girls in Dublin Other religious orders followed their example — the Hospitaller Order of St. John of God in Dublin in 1931, the Brothers of Charity in Cork in 1939, the Sisters of Charity of Jesus and Mary in 1954, the Congregation of the Daughters of Wisdom in 1955. All these were residential institutions. A new departure was made in 1956 when a community group called The Association of Parents and Friends of the Mentally Handicapped opened its first day-school in Dublin in 1956. A similar community group called the Cork Polio and General After-Care Association started work in Cork in May 1957 to rehabilitate the victims of a Polio epidemic there. In the following year it opened its first day-centre and school for the young mentally handicapped and in 1959 it opened its first residential centre. Similar community groups are now operating in various centres throughout Ireland.

Generous Help

From the beginning these various groups were helped generously and effectively by the Local Government Authorities and by the Departments of Health and Education. The provision of capital expenditure and of the cost of maintenance in residential institutions was borne, in most instances, to a large extent by the Public Health Authorities and by the Department of Health and so it was no surprise when in February 1961, the Minister for Health set up a Commission of Inquiry on Mental Handicap. The Commission reported to the Minister in March 1965. This Report is the subject of my paper. The Commission was composed of 25 members. Ten of these were doctors of whom 5 were psychiatrists and 2 general practitioners. In addition there were a pediatrician, a medical inspector and a county Medical Officer of Health. Besides these there were a psychologist, a psychiatric social worker, 3 teachers, 4 representatives of the Departments of Health and Education, two representatives of Voluntary Bodies caring for the mentally-handicapped and two representatives of the National Organization for Rehabilitation. The Chairman was a Chartered Accountant, Mr. Kevin Briscoe. The General Body had 32 meetings and in addition there were 102 meetings of the various Committees set up to consider special problems. The Commission invited submissions from Institutions and Individuals, the members visited all existing institutions in Ireland and took part in European Congresses in London and Holland. Centres were visited also in Holland and Northern Ireland and the Commission was addressed by Dr. Speijer, Director of Mental Health at the Hague and by Dr. Buckle of the World Health Organization, Regional Officer for Mental Health. The Commission considered also reports on work for the mentally-handicapped in England, Scotland, Northern Ireland, Holland, Denmark and in addition several members visited centres in the U.S.A., Belgium, and Sweden.

Definitions:

The Commission decided to recommend the use of the term Mental Handicap as signifying: "Those who by reason of arrested or incomplete development of mind have marked lack of intelligence and who have either temporarily or permanently inadequate adaptation to their environment." In addition it decided to use with a slight variation the tri-partite division of the World Health Organisation Manual 1948, i.e.

Mildly Handicapped (those whose I.Q. usually falls between 50 and 69)

Moderately Handicapped (those whose I.Q. usually falls between 25 and 49)

Severely Handicapped (those whose I.Q. usually falls between 0 and 24)

Statistics:

No survey of the mentally-handicapped in Ireland had been made since 1908. The Commission felt that a complete survey was neither necessary nor practicable. However a partial survey of the severely-handicapped was undertaken by the Hospitals Commission at the direction of the Minister for Health. This revealed that in 1962 we had 574 children with an I.Q. of less than 20 in the group 6 — 13 years. Of these 400 were in Institutions and the parents of the remainder desired to have their children institutionalised. There were more boys than girls. Based on this survey the Commission estimated that we have in this country

(A) *Children*:

Severely-handicapped children :	0— 7 years=	650	i.e. 48 per 1,000 of
	7—16 years=	800	population
		1,450	
Moderately-handicapped children:	0— 7 years=	1,110	i.e. 9 per 1,000 of
	7—16 years=	1,430	population
		2,500	
Mildly-handicapped children :	0— 7 years=	1,000	i.e. 3.6 per 1,000 of
	7—16 years=	9,000	population
		10,000	

(B) *Adults*:

Severely-handicapped:	1,300
Moderately-handicapped:	2,400
Mildly-handicapped:	10,500

In the light of these figures and having regard to the existing development of services the Commission made 96 recommendations, the main ones being:

(1) While the obligation to provide for the assessment, education, and training of the mentally handicapped rests primarily on the community in general and the Government, both local and national in particular, the present system should be fostered and continued whereby Voluntary Bodies provide the service with the approval, guidance and aid of the Health Authorities and the Departments of Health and Education.

(2) Each Health Authority should (i) through the Voluntary Bodies provide a general team comprising a psychiatrist, psychologist and social worker to carry on a diagnostic, assessment and advisory service so that help and advice for the mentally-handicapped can be provided at the earliest possible date, (ii) provide school teams consisting of the school medical officer, school psychologist and social worker. (This implies that a school psychological service should be set up by the Department of Education).

Education of Children

(3) Where feasible, nursery units for early training and treatment of the mentally-handicapped should be set up.

(4) A curriculum of special education should extend over at least 9 years i.e. from 7 years to 16, and in the final year emphasis should be on pre-vocational training.

(5) Special Education for mildly mentally-handicapped pupils should be under the national system of education and in special schools mainly. In some cases special classes may be set up in ordinary schools. The maximum size of classes should be 16. It was envisaged that provision should be made for 1% of the school population by 1975. The optimum size for special schools is 150—200 pupils and for residential schools the minimum should be 100. Schools for mildly-handicapped should be entirely separate from those for moderately-handicapped. Adequate transport should be provided for children attending special schools and classes.

(6) Day and residential special education should be provided under the national school system for moderately-handicapped children who can benefit from such i.e. generally those with an I.Q. over 35. The maximum size of classes should be 12.Adequate school meals and transport should be provided.

(7) Day and residential units should be established to provide training and care for severely-handicapped children and for moderately-handicapped children who cannot benefit from school education.

Adult Care

(8) Each Health Authority should ensure that a vocational assessment and placement service is available in its area either by using the services of the National Organisation for Rehabilitation or the services of other Voluntary Bodies.

(9) Vocational Education Committees should provide special evening classes for adult mildly-mentally handicapped, and Voluntary Bodies should provide training for employment and life in the community. An adult training centre with about 30 places should be set up in Dublin by voluntary bodies combining.

(10) (a) Voluntary bodies should set up and/or extend sheltered workshops and a prototype should be set up in Dublin; (b) The Minister for Education should assist sheltered workshops which train handicapped workers to do productive work; (c) Health Authorities should encourage and co-ordinate the work of Voluntary Bodies to provide adequate after-care for handicapped adults living in the Community; (d) The Minister for Health and Health Authorities should provide capital and maintenance grants to help Voluntary Bodies to provide and operate sheltered workshops. The Commission favoured the idea that Voluntary Bodies operating workshops should receive from public funds a grant which would supplement the monies earned by the workers so as to provide a decent minimum wage for each worker. (The former Minister for Health, Mr. Sean Flanagan, publicly accepted this responsibility and promised to implement it).

Residential Accommodation

(11) As regards residential accommodation:

(a) As far as possible residential accommodation should be provided by voluntary agencies.

(b) Provision should be made in residential centres to cater for mentally-handicapped children who are very troublesome.

(c) A unit of 30 places should be provided for delinquent mentally-handicapped boys — separate from but associated with a residential centre for the mildly-handicapped.

(d) Provision should be made for Irish-speaking children.

(e) Residential centres should provide for temporary admissions to assist parents at times of stress.

(f) All residential centres need trained staff.

(g) Organizations providing for all age groups and all grades of defect are the most desirable.

(h) For younger age-groups centres should have between 100 and 200 residents.

(k) Adults should have their own centres.

(l) Outdoor recreational space is necessary.

Prevention and Research

(12) Prevention and Research need a high priority.

(13) There is need for a well-staffed genetic centre.

(14) Public Education regarding factors favourable to the production of mental handicap is desirable.

(15) There is need for increased special obstetrical cover to reduce the incidence of prematurity and raise the standard of ante-natal and intra-natal care.

(16) Short-term residential units should be established to secure maximum control of epileptic children.

(17) Chief Medical Officers should record and follow up cases where the likelihood of mental handicap is high.

(18) There should be routine testing of infants for defects which, untreated, may lead to mental handicap.

(19) All possible measures should be taken to prevent mental handicap due to cultural or environmental deprivation.

(20) The Ministers for Health and Education should encourage and finance research.

Training of Personnel

(21) Medical Students should receive more instruction on mental handicap.

(22) As regards postgraduate training:

(a) The Course for the Diploma in Mental Health should include more instruction on mental handicap.

(b) Candidates for the Diploma in Psychological Medicine should spend at least 3 months in a centre or centres providing a comprehensive range of services for the mentally-handicapped.

(c) Senior Psychiatrists in the Mental Handicap Service should have had at least one year's practical experience in the treatment of mental handicap after the receipt of the Diploma in Psychological Medicine.

(d) There should be increased instruction on mental handicap in the course for the Diploma in Child Health.

(e) Universities should increase their provision for the training of psychologists.

(f) Psychologists who propose to practise as educational or clinical psychologists in the service of the mentally-handicapped should have a year's postgraduate training in the work under a senior psychologist.

(23) Increased provision should be made for the training of nurses for the mentally-handicapped and regular refresher courses should be provided.

(24) Teachers of mentally-handicapped children should have: (a) a basic teacher-training, (b) at least two years' experience of teaching in an ordinary school, (c) special training for the teaching of the mentally-handicapped.

(25) Courses should be established for the training of Psychiatric Social Workers and Speech Therapists.

Finance

(26) As regards financial aspects:

(a) The existing system of financing services for the mentally-handicapped should be continued. Where necessary Health Authorities should provide increased financial help to Voluntary Bodies operating the Services.

(b) The cost of providing an adequate meal for mentally-handicapped children attending special schools and classes should be borne by the Minister for Social Welfare.

(c) Health authorities should deal sympathetically with hardships imposed on families or persons through payments over a long period related to the provision of services for a mentally-retarded person.

Other Proposals

(27) The majority of the Commission felt that no new legislation is necessary to carry out its recommendations. A minority held that coercive powers may be needed in cases where parents fail grossly in their duty to secure the care, training or education of their mentally-handicapped children.

(28) The Commission gave a qualified approval to a system of boarding-out mentally-handicapped children attending a special day-school or special classes. This proposal was vigorously rejected by four of the members of the Commission.

(29) The provision of hostels was given only a few lines in the report. Again a minority of the Commission expressed the view that this subject should have been given much more consideration.

(30) The proposal of the Commission that disused mental hospitals might be used to accommodate the mentally-handicapped in some cases was also regarded by a minority group as something which was most probably undesirable unless there is a complete change of outlook on the part of the Public and the Administration of the hospitals.

(31) A number of members of the Commission recommended strongly that more women should be included on the staffs of organisations dealing with children and young adults.

Conclusion

The greatest tribute to the work of the Commission lies in the increased pace of the work for the care, training and education of the mentally-handicapped which occurred during the sitting of the Commission and since its termination.

The decision to continue to rely upon voluntary bodies to maintain and develop the work was economically, psychologically, and socially sound and it has proved its value in the event. Its success depends upon public education and an increasing commitment of the community generally. Because of its nature the pace of the development of the work for the handicapped has varied in the different countries, and in some places little development has yet occurred. The outstanding success of the work in other areas will, I am convinced, stimulate these less-developed areas to follow suit and,indeed, already we see this happening. I am convinced that the Commission has produced much fruit and that more and more it will justify the labour and expense that it involved.

Louise Rossier, Switzerland

THE ZURICH SCHOOL PROGRAMME FOR THE MENTALLY RETARDED

Society requires certain capacities and certain accomplishments from each of its members.

Yet the norms required by society change just as society itself changes. It depends therefore upon the cultural background of a country, which child is called a backward child. In an earlier, simpler age, some of these children might well have found their place in life without any very specialised assistance, but, since the world to-day is complex, there has been an increase in the number of children who fall below the high norms which our complex way of life in Western Europe requires: thus the number of backward children has increased.

Some 100 years ago only very bright children were sent to schools. The intellectually less gifted child stayed at home, worked on the farm or in the workshop, or became a soldier if he had enough physical strength and aggressiveness. Anyhow he found his place in society and was just as happy as a well-educated person. The situation is similar even in our day in the so-called underdeveloped countries. Only the bright children are sent to school and it is not unusual for a child not to go to school. In highly civilised societies the situation is very different, because there is compulsory education as in Switzerland for over 100 years. We Europeans not only have laws which oblige every child to go to school (such laws also exist to-day in most of the underdeveloped countries), but we also have the necessary facilities to send the children to school and moreover the practice of doing so.

Compulsory schooling was already a long time in existence in Switzerland before it was recognised that there are children for whom ordinary primary schools cannot provide efficient education. At the end of last century special classes were opened for children who could not survive in the regular primary schools. In the last seventy years these special classes have grown into a well-organised network of public facilities for the slow learning, the slightly backward child, down to an I.Q. of 75.

Maternal care

But what happens to the other children who are more severely retarded? They are not accepted in special classes for backward children. Three decades ago the parents of these children were advised to send them to residential institutions. If the parents did not follow this advice the child stayed at home and it depended exclusively on the skill and the endeavour of his parents what became of him. But even the severely backward child is in the first instance a child and only in the second instance a mentally retarded person. Like every other child it needs the feeling of belonging, it needs maternal care. There is no doubt that the care and affection of a mother provides the background for a genuine education as well as for social adjustment. Mental retardation is no reason to separate a child from his family, to destroy a natural unit. The family must be helped to care for the child. Just as a normal child needs not only good parents but also good schools, so the mentally retarded child needs his family surrounding and appropriate schools.

That is why in 1937 Dr. Maria Egg started a day school for those children who were not admitted to the special classes for backward children. At that time such children were called "ineducable". Nobody would call them so now, when he sees the same kind of children on their way to school in public transport, or at their work. These children can be trained to have good habits and social behaviour. They can learn self-help and various manual skills. They can learn to express themselves through speech, music, and arts. Many of them can even learn to a certain extent the use of scholastic skills, such as the three Rs. Anyhow they can learn to live the happy life of a child, in a way that is as similar as possible to that of a healthy child.

Thirty years ago no state had laws encouraging local districts to provide classes for trainable children. Switzerland had not any either. Yet as laws do not create schools, the lack of laws does not prevent their establishment. At the time of the foundation of the first day-school in Europe for the severely retarded child, there was no hope of any government help. To-day it is accepted that every child has the right to an adequate education and every institution to adequate financial support. This was not so when my sister and I started our pioneer class. For a decade the only reward of our work was the obvious improvement of our methods. My sister, Dr. Maria Egg, spread with infinite energy her idea that there is a way to educate the severely retarded child and that there are no "ineducable" children. It was real pioneer work to discover an approach to the personality of a severely retarded child at a time when there was no scientific interest in this field. We worked out year by year new investigations to find a key to the retarded mentality. The smallest success in awakening the capabilities of a child was a challenge to continue the experiment, to make a selection of methods, to record new psychological facts.

After ten years the Zurich Municipal Council in appreciation of our educational methods decided that the school should form a part of the public schools under the direction of Dr. M. Egg with me as her deputy. Meanwhile the authorities and the public realised that it is not only psychologically sounder but also cheaper in practice for the community to provide day-schools for the trainable child, than to give them merely custodial residential care. Thus our school was influencing developments in other places. At present about 50 communities in Switzerland have similar day-care schools and new ones are opening year by year. Most of the staff received training in the Zurich school and were helped to start by us. The tremendous pioneer work of Dr. Egg was honoured last year by the international award of The Joseph P. Kennedy Jr. Foundation. The same foundation sponsored the translation of her books "When a Child is Different" and "Education of the Child who is Different." The third volume, dealing with adolescent and adult retardates, is now in press with the title "A Different Way of Life for Different People."

Schooling is free

Since the City Schools for Retarded Children are under the School Board of Zurich, schooling is free for every child who is in need of special care. Our severely retarded pupils enjoy the same advantages as their healthy comrades; they have free educational aids, physical care by the school medical service, physiotherapy for palsied children, speech therapy for those with speech difficulties. For all activity there is ample space in two modern buildings situated in the western and eastern centre of the city, with good traffic communications in every direction. And above all we have an adequate salary for our teachers, which facilitates the formation of a capable, well-qualified staff. We have no waiting lists. Every few years new teachers and new classes are added so that every child can be accepted immediately.

Presently the City Schools for Retarded Children are offering education for 120 children from 5 to 17 years. There is no lower I.Q. limit for accepting a child. Ability to walk is the only qualification for entering and even this skill need not be perfect. (A number of children had not even mastered toilet training when they came to us). We have no school buses, because we do not like this system. Coming to school on foot or by public transport is part of learning to live. Gradually the children learn to make their own way to school. Obviously, in the beginning they must be brought by the parents. But there is no need for the parents to accompany their child once he reaches a certain level of social adjustment. The child can then come to school under the care of an older pupil. As far as possible we allow in this as in other situations the influence of sympathy and antipathy to operate in the children. These are feelings deeply rooted in the unconscious part of personality. Since emotional life is well developed in most retarded children there is no need to frustrate it. It is amazing to see how important it is to the "big one" to achieve the responsibility for his small friend and how positive is the effect on his character. It seems to be the hardest punishment if I must say: "You have not cared for your little friend, you must go to-day alone!" Such punishment is however rare and exceptional.

Tuition must be different for each child, for each has varying handicaps. Mental retardation is only a collective name for very different deficiencies. When a child has been diagnosed as retarded, it is the task of the teacher to find out exactly what is wrong with him in order to prescribe the proper education for him.

We may note that a certain child, for example, is not capable of transferring to his hands impressions that he receives with his eyes. He must therefore be taught almost like a blind person, even though his eyes are intact. Another child may be incapable of understanding or processing what he receives through his ears, even though his hearing organs are healthy. In this case the other senses — sight, touch, and kinaesthetic — must be mobilized as much as possible to help him.

In severely retarded children there are more or less severe limits on the development not only of the intelligence but also of the emotions, will, initiative, imagination and creative powers.

No hard-and-fast scheme

For the teacher faced with such diverse handicaps there can be no definite hard-and-fast scheme. But there is the basic rule of accepting the child as he is, and at the same time leading him constantly day after day towards the goal of what we would like him to be. No teacher can succeed without emotional involvement, least of all with the retarded. We can achieve something only when our therapy is love — not love for children in general, but love for that particular child who happens to stand in front of me. Our pupils have one point common with all children: they are extremely sensitive to being liked or disliked. Only by loving them can we oblige them to make all the efforts we wish them to do. And here, as everywhere in education, what works is not what we say, but what we really are.

Teaching must be completely individualised. There are no group standards which the children are expected to achieve in a certain time, though, of course, there there are group activities where all the children join in playing together, or singing or reciting together. There is no competition, for many of our children when associating with the normally gifted have too often been fated to be the loser. Everything is done to give the children a sense of achievement. Some children have met with so many disappointments that to get a feeling of success is for them a tremendous step forward. By leading the child from success to success we can maintain his activity. This is the basic idea of our methods, that each task must be adapted to the capability of the child to give him the happy experience of improvement.

The general activity of the child is play. Whether a child is healthy or handicapped, he can learn to develop all his capacities and skills by playing. Thus the method of educational games is practised in all the groups of our school. As a game the child learns in the lowest grade of our school, in the kindergarten, the simple tasks of every-day life: how to put on and how to take off hats and coats, how to behave, how to greet people. While playing the child learns to pursue an aim, he learns patience and endurance. Interest in new things is usually so slight that the spontaneous acquisition of new knowledge through play is not sufficient. To learn through play, the handicapped child needs our guidance. Each task must be split into its constituent parts and must awaken the child's interest. If these games are well thought out, they can arouse the interest of even very confused and severely damaged children. By making the games more and more difficult — without expressly informing the child of this — we guide the child towards observation, comparison, reflection. The educational games of this lowest degree are described in detail by Dr. Maria Egg in her book "When a Child is Different."

It depends only on the development of the child how long he will stay in the kindergarten. The children are assigned to the groups according to their abilities, not their age. However we avoid having more than four years difference of age within any one group, because the personality of the 12-year-old retardate is different from that of a 6-year-old even if their intellectual level is alike. The groups have contact with each other, because some abilities of a child may be better developed than others, so that he can join in a certain activity in a more advanced group.

Musical talent

Musical talent develops independently of intelligence and other skills. That is why it is the only occupation wherein each child succeeds. Every child is touched emotionally by music; it means something to each one. The music experience is enriched by music-making. It is important that a great deal of singing be done, not only at times when the schedule calls for it but also informally as the need arises. The children learn first to handle a rhythmical instrument and then step by step they are introduced to the perception of melody. Thus every child learns to play an instrument and joins our orchestra. Our method is purely additive as most of our pupils cannot read notes.

When a child leaves the kindergarten and enters the lowest grade of the school-group he faces the same situation as before except that now the subjects of the games are the basic school-knowledge. The beads, the sticks, the pictures will teach him the different numbers. The introduction of number concepts occurs very gradually and very concretely. The principle here as everywhere is that each task must be resolved into component parts and then thoroughly learned. Another basic principle is that we can teach only one thing at a time. Number concepts are always extended by only one number at a time, and we instil each quantity thoroughly with all possible procedures. The children like their arithmetic classes very much, probably because they offer such a great variety of objects to represent the numbers visually and a wide variety of calculation games. This material makes it possible to repeat again and again an exercise without causing boredom. Once calculations within the first set of ten numbers have been learned the child can advance to a new class.

We have three grades of school classes, and it depends merely on the development of the child when he is changed from one to another. The daily classes train our retarded children in mental gymnastics through the subject of arithmetic. Learning to read is also an excellent exercise in form discrimination. In the kindergarten the child learned to compare different shapes and now he will play similar games in which he notes the differences between the letters of the alphabet. He will engage in other progressively more difficult games to learn syllables and words. It is the task of the teacher to adapt the new material to the capability of the child and to emphasize his positive results not his shortcomings. No child is forced to repeat an exercise because his neighbour did not get it, nor is he blamed because somebody in his class did it better. If a child learns to acknowledge an obligation, if he learns to finish a task, he has made a great step forward in life.

Reading with understanding

When the child has learned the basic knowledge of the three R's he enters the class of the "big ones". This is a rather hard step, because the retarded child makes few spontaneous connection between his single ideas. Our experience is that many retared children do not connect reading with understanding what is read. So we must teach them in a special way to understand what they read. We have devised games where the game cannot go ahead if one word is not in its right place. Few books are simple enough. It may happen that a child reads fluently but does not understand the individual words. Some of my reading-games have been published in two workbooks. The first: "Read Your Words!" has the goal of getting the child to understand a single word which has been read. The second volume: "Read Your Sentences!" teaches the comprehension of a sentence. These workbooks can be used also for individual work and can arouse independent thought without express urging of the child. The games are continuously fascinating for the children. They never become bored with this type of practice. Very often there are children who make only modest progress in reading aloud but who can solve our systematic reading games by silent reading, proving that in this form of reading they possess not only word but also sentence understanding. Of course it takes years and years of daily systematic exercises before a retarded child is able to make a reasonable story out of a puzzle of sentences.

There are very few suitable books dealing with everyday life. In a world which is becoming more and more urbanized we must bring city life closer to our children. Retarded children must also learn to understand their environment through observation. They see, but they do not observe; they hear, but their hearing lacks acuteness; they think, but they do not reflect. All this they must be taught. Three of my workbooks were published under the combined title "Come and See". See what? Everything surrounding the child, that he sees every day. The first little book is called "We Measure" and its goal is to make the child clear in his mind as to what objects around him are like. The second workbook is called "House and Yard" and the third "Streets and Traffic". Years pass by while we linger over each of these themes with the aim of teaching the children to observe the place they call home. We want to help them grow joyful in our real world.

Training of the brain and of the hands must go in parallel. We worked out a complex method of handicrafts leading each child from simple preliminary exercises to creative activity and to practical work. The training of manual ability goes on in all of the groups, because the teaching of handicrafts is of major importance in the education of mentally retarded children.

In some of our pupils the development of manual dexterity has priority, because of their very limited mental possibilities. When we realize that certain children after a daily adapted training lasting two or three years can not reach the level of even the lowest school class, those children transfer to our so-called "labor classes". Here they learn various manual skills and techniques corresponding to their capabilities. Even at this lowest mental level we have the satisfaction of knowing that after a couple of years' training they have learned the pleasure of doing a job well, and can enter one of our workshops and so be enabled to live a life of human dignity.

Kevin McDonagh, Ireland

MATHEMATICS FOR MILDLY MENTALLY HANDICAPPED CHILDREN — AN EXERCISE IN CURRICULUM DEVELOPMENT

The Present Situation

Although special schools for mildly handicapped children (50-70 I.Q.) in this country are free to design their own programmes, in practice there is widespread uniformity with regard to the content of the mathematics programme and the methods of teaching. In general, mathematics learning is confined to social arithmetic on the grounds that these children need specific arithmetic skills of a mechanical nature, if they are to be satisfactorily integrated with society. To acquire these skills, a great deal of computational practice is needed and therefore there is neither the time nor the necessity for exploring mathematical concepts or structures. This aim appears to be a practical one and to achieve it, teachers make every effort to reproduce in the classroom, in an attractive way, real-life situations which the child must meet outside the school. It is assumed that continued exposure to these situations and a great amount of practice in computational skills provide the most effective practical way of preparing these children for life.

Teachers' Views on Present Situation

Discussions with teachers, however, showed that they were not at all satisfied with the present approach to mathematics teaching. Many felt that it did not make sufficient demands on the child who, if properly motivated, might grasp more sophisticated concepts. In general they agreed with the view expressed by Dr. F. P. O'Connor of Columbia University when speaking in Ostend that "Self-help skills can be incorporated in the efforts to foster intellectual development. We can no longer permit the terminology of mental retardation to mean—let's avoid the intellectual, these children are retarded in that area." Teachers said that the practical utilitarian approach was time-consuming and because it took so long to master a particular skill, it was very difficult to maintain the pupil's interest in the assignments. In mechanical arithmetic success was equated with getting the correct answer, but since in the case of these children there was a low probability of success, the children's self-confidence was often undermined. Teachers considered that this lack of confidence carried over to other subjects. They also pointed out that new techniques for teaching reading to normal children had been found valuable in teaching the mildly handicapped and they asked what modern research into mathematics teaching had to offer the teacher in a special school.

A Different Approach

It was decided that the Department inspectors of special schools would draw up a reasonably detailed programme or sequence of mathematics learning aimed at developing logical thinking and an understanding of mathematical concepts as a basis for acquiring the computational skills. Emphasis was placed on 'guided discovery' as a means of securing the child's personal involvement in the learning situation. It was hoped that this involvement might give rise to an 'emotional carryover' which would bring about non-specific transfer of training to other areas. (White — Child Psychology 1963).

The 'grasping of relations' was considered to be a vital part of intelligence (Spearman 1927 — The Abilities of Man; Skemp 1961 — British Journal of Psychology) and it was thought that the seeing of relations and an examination of their properties would contribute considerably to the overall intellectual development of the child. Since mathematics is a study of relations it appeared to offer a possibility of achieving not only an efficient standard of computation but also of raising the child's general intellectual ability. The work of Piaget seemed to indicate that conservation was not achieved because the child failed to isolate the relevant relations. It was decided that the child should be given considerable experience of identifying and recording relations of colour, size, shape, texture etc., leading towards the identification of a more sophisticated relation between two sets of objects in 1 - to - 1 correspondence with one another. The exploration of relations was therefore regarded as an essential step towards understanding the cardinal and ordinal aspects of number. It was also thought that an awareness of spatial relations would facilitate the child's conservation of length, area, capacity, etc.

Although it was previously thought that educational training programmes did not accelerate progress at the pre-operational stage, recent studies indicate that this is not so. (Fletcher Hill — Annual Review of Psychology — Vol. 20, 1969).

The work of Zolton P. Dienes in teaching mathematics to normal and bright children was considered relevant. He distinguishes between constructive and analytic thinking. Constructive thinking takes place when the child as a result of his experience observes relations, discovers patterns and constructs a concept. In analytic thinking, however, a rule is known and by means of deduction a conclusion can be reached. The child at the concrete-operational stage uses constructive thinking and only in exceptional cases is the child at this stage capable of an analytic approach. It was decided, therefore, that these children would be provided with learning situations where constructive thinking might take place. The child would explore his environment as well as classroom situations structured by the teacher with a view to discovering the essential concepts. The problem was however "to devise standard mathematical situations in which this adventurous kind of thinking can still take place. (Dienes— Building up Mathematics). The Guides published by the Nuffield Foundation Mathematics Project were found to be invaluable both as a source of content and pedagogical procedure.

Content of Programme

The programme itself attempted to show a necessary sequence of mathematical learning. Play with continuous and discontinuous materials was exploited with a view to identifying relations between various objects in the environment. Awareness of relations led to classification of sets of objects, the sets being partitioned according to a particular property. Sets of objects were compared with a view to finding a relationship between them. Structured classroom situations led the child to identify the relation between sets in one-to-one correspondence with one another. Matching exercises followed and led to the cardinal aspect of number. Relations of 'greater than' and 'less than' were applied to cardinal numbers and the child was led to appreciate the ordinal aspect of number. The operations of addition, subtraction, multiplication and division followed and structured materials were recommended to bring out the nature of these operations. A sequence of experience was prepared with a view to leading the child towards conservation of length, area, capacity, weight, etc. The childrens' findings were to be recorded using pictorial representation or in written form if the child was able to write. Some of the oral recordings were put on tapes. Considerable attention was given to the recognition and naming of regular shapes leading to an idea of area. The symmetric and transitive properties of relations were emphasised where appropriate—

$$\text{John} \xrightarrow{\text{owns}} \text{a dog.}$$

Is it correct to write

$$\text{John} \xleftarrow{\text{owns}} \text{a dog.}$$

When ordering objects according to length, weight, etc. the transitivity property was discussed e.g. The ribbon is longer than the stick. The stick is longer than the box. Therefore the ribbon is longer than the box.

It was emphasised that the exploration of mathematical concepts should not be confined to the regular mathematics sessions but that these concepts would be discussed and applied as the need arose during the reading, art or physical education lessons. Great stress was laid on the value of discussion between the pupils themselves and between teacher and pupil.

Dienes Multibase Arithmetic Blocks were used to explore the structure of the place-value system and the number operations. The decision to use this material was influenced by the report of the National Foundation for Educational Research in England and Wales (Mathematics in Primary Education, 1966, U.N.E.S.C.O.). Many teachers were originally opposed to using this material but substantial changes in attitude took place as they experienced its use in the classroom.

Not A Controlled Experiment

In drawing up the programme and getting it underway in the schools, there was no question of its being a controlled experiment. The teachers kept individual records on each child noting his progress in mathematics, his reaction to various items of content and learning situations, and the effect of the project on his social behaviour and on his progress in other subjects. They also recorded their observations on the suitability of the content and on the value of the sequence recommended in the programme. It is hoped that the teachers' comments would prove valuable in planning future programmes as well as in the revisions of the existing one. The observations of inspectors visiting the schools were also considered valuable. In the case of the inspectors it was felt that the project would in addition provide them with valuable experience of organizing in-service training courses for teachers.

In general it was hoped that if the teachers showed enthusiasm for the programme and made claims for it in certain areas, then psychologists and others might wish to subject these claims to critical appraisal in a rigorous way.

Getting the Project Under Way

Two schools were chosen in which to carry out the project — Delvin and Navan. Both schools were reasonably small having approximately a hundred pupils in each and since the schools were near each other inter-school staff conferences could be arranged. Navan catered solely for day pupils while Delvin catered for both day and residential pupils. Both schools had male and female pupils. In general these schools were similar to those built or about to be built in rural areas in this country.

To get the project underway, the managers and staffs of both schools were consulted and they agreed to give full co-operation. The Department of Education made its inspectors of special schools available for drawing up a programme and giving inservice training and an additional grant for school equipment and books was also given. Notes on the programme were subsequently issued to the teachers and a four-day course was given to them in September 1968. The course itself consisted of lectures on content and a discussion of the appropriate teaching methods. 'Guided discovery' was emphasised and there were some practical sessions where teachers themselves explored the materials and recorded their discoveries. Copies of the Nuffield Guides were recommended and issued to the teachers and detailed work was planned for the following month. The inspector visited the schools at the end of the month and discussed progress with the teachers. The detailed work planned for the following months was also discussed. Inspectors subsequently visited the schools at intervals of approximately two months. In the meantime teachers had weekly or fortnightly staff conferences in each school while on occasions both staffs came together for inter-school conferences.

The programme itself was intended to provide a sequence of mathematics learning from reception class through to the school leaving class. After the initial inservice-training course, however, teachers of middle and senior classes decided to follow the programme to the extent to which it suited their own particular classes.

Appraisal

(a) Inspector's views.

As a result of their visits to the schools, inspection of the work done and conferences with the class teachers, the department inspectors were convinced that worthwhile progress had been made. Children appeared to them to have a deep personal involvement in their mathematical assignments. Children on many occasions were so engrossed in their work that they were unaware of the presence of visitors in the classroom. This involvement was not confined to activity assignments only. A very formal subtraction algorithm (201-102) was given to a group of four children to see if they displayed the same sense of urgency in dealing with a purely mechanical sum. One child got the correct answer and this child was subsequently questioned by the other children. The investigation of the problem carried on right through the tea-break and as the discussion became heated other children left their groups and began to join in the fray. One child remarked "How can you swap one ten for ten units when there are no tens there?" Another child proceeded to explain this by referring to Dienes M.A.B. In general the children displayed an involvement which was not apparent in previous years. The children appeared to have confidence in themselves and tackled problems with an expectation of meeting success. The quality of the children's conversation was better. Children appeared to be more observant and used words such as pentagon, hexagon, rectangle etc. when describing situations not at all associated with the mathematics lesson. In the more specific area of mechanical arithmetic the children appeared to be at least as efficient as formerly but had deeper insights into the nature of the operations being used and consequently could apply these operations when solving practical problems.

(b) Teachers' views

By the end of the year, teachers claimed that as mildly handicapped children were capable of following the trial programme, all of the work proposed in the programme could be done but they had reservations about the value of certain items of content. Many teachers of junior classes considered the work on relations to be interesting up to a point, that it gave greater opportunities for language development but claimed that there was no connection between this work and subsequent mastery of the cardinal and ordinal aspects of number. Paradoxically, teachers of senior classes claimed that the greatest obstacle to number progress for their slower children was their poor ability to discriminate between various relations. The inspectors believed however, that at the initial inservice-training course more time might have been devoted to a discussion of the relevance of an awareness of relations to the subsequent acquisition of basic mathematical concepts.

In general the following claims were made by teachers:

1. The children were involved in their mathematics assignments to a much greater extent than heretofore.

2. The child's expectation of success in the various assignments was greatly increased and resulted in building up the child's confidence — consequently there were fewer discipline problems.

3. The exploration of shapes and their properties developed visual perception and a greater awareness of environment.

4. Children often displayed an eagerness to discuss their work and the quality of their language had improved.

5. The pre-number experience of relations embraces in a comprehensive way the activities that are considered essential at the pre-reading stage e.g. picture-to-picture matching, word-to-picture matching, etc.

6. The teachers claimed that the child's awareness of relations carried over to other areas — during reading sessions children frequently informed teacher that certain words were related by the fact that they ended in the same letters e.g., house, mouse, etc.

7. They felt that children acquired a deeper grasp of number operations and consequently needed less practice to achieve efficiency in computation.

8. Some teachers claimed that since the achievements of children in the 60+ I.Q. range was significantly greater than in the case of children in 60—I.Q. range, the question of streaming should be considered.

9. Dienes M.A.B. were well received by all teachers but for different reasons. Junior teachers claimed that children enjoyed building with the material, came to grasp equivalences and acquired insights into the nature of the addition and subtraction operations. Some claimed, however, that a great deal of time had to be spent with the material and that while understanding may have improved the same standard of efficiency in computation might be achieved in less time by reverting to the old programme. Other teachers opposed this view. Teachers of senior pupils claimed that M.A.B. helped children to understand decimal fractions, an area of arithmetic which their children formerly failed to reach.

10. Teachers claimed that the initial four-day inservice-training course was insufficient. The course itself should have given more time to practical sessions rather than to lectures. During the year there should be at least two visits per term by the programme planners. The first visit should follow the initial course by no more than three or four weeks. The course should provide not only the general outline of the year's programme but also a specific work plan for the weeks immediately after the course.

Conclusion

In general the teachers displayed a high degree of enthusiasm for the new approach and this enthusiasm was maintained throughout the year. They devoted a considerable amount of time to private study, to the keeping of individual records on their pupils' progress and to preparing detailed daily notes and teaching aids for their mathematics lessons. Nevertheless they claimed that mathematics teaching was now more interesting and satisfying for the teacher.

Although the enthusiasm of the teachers may to some extent be explained as a Hawthorne effect attributable to the fact that they were invited to participate in special work which was considered to be of importance, the high degree of enthusiasm and the fact that it was maintained over a long period may be an indication that teachers have reached convictions about the merits of the project. Because of the sequenced nature of the programme, however, its effect on the children cannot be properly evaluated for at least five years, when the present reception classes will have worked right through the programme. It is also hoped at the end of the study to have qualitative measures of changes in the children's mathematical attainments and general vocabulary attributable to the programme.

Anne Welch Carroll, U.S.A.

AN INVESTIGATION OF A MODALITY-BASED CURRICULUM FOR HIGH-RISK LEARNING-DISABILITY CHILDREN

We can probably learn more about learning from children with learning disabilities than from college sophomores or rats in mazes (Bateman, 1969).

One of to-day's major social problems is the enormous number of children who, as a result of severe reading, writing, and spelling disabilities, are unable to realize their intellectual and educational potentials. The incidence of reading difficulties has been reported to be as high as 30 per cent of the school population (Regents' Conference on the Improvement of Reading, 1962; Roswell and Natchez, 1964); more conservative estimates put the figure between 5 per cent and 15 per cent (Hawke, 1958; Rabinovitch, 1959). "The magnitude of the reading problem and the shattering impact of reading disability on personal and vocational adjustment should accord proposals for its correction a major position in mental hygiene programs," states child psychologist Leon Eisenberg (1961), (deHirsch, Jansky and Longford, 1966).

An analysis of existing procedures in primary school programs indicates general neglect of the child's individual approach to learning. One might say that we have tried to mould the child to the treatment program rather than the program to the child.

Once the patterns of difficulty are known for a child, an efficient classroom program that meets the child's specific needs must be developed. Children with similar needs can be grouped for instruction with grouping changing as needs change. DeHirsch and Jansky (1966) stress the need for early intervention for high-risk children.

Learning to listen, to comprehend, to remember and recall, to formulate and express in an oral symbol code and eventually to read and write in this same code is probably the most difficult task a young child undertakes. The school program must be designed to help the child learn through his specific combination of sensory, intersensory, memory, or motor abilities (Myklebust and Johnson, 1964).

Whatever the age of the child, the development of a concept usually follows the order of *perception, integration, association* of *ideas*, and *expression* (Myklebust and Johnson, 1964).

The Problem

The purposes of this study were: (a) to develop a screening device that could be used by teachers to indicate children with learning problems or the potential for developing learning problems and the nature of their problem, (b) to develop and implement a task-oriented curriculum for use in first and second grade geared to the individual needs of each child, and (c) to evaluate the effects of this experimental curriculum on achievement compared to the curriculum now used in the classroom.

Justification

This study proposes to make a beginning exploration into teacher detection of the learning patterns of low socio-economic kindergarten children and first grade children and the ways their learning can be maximized. The deficit pattern that has been found in low-income children leads to a compounding of school difficulties the longer they remain undetected and uncorrected.

Teacher screening is an important part of this detection process. It is impossible in terms of time and the personnel involved for school psychologists or for community mental health agencies to undertake the massive screening of school-age children. In addition, research has shown that teachers, when they know what to look for, can be quite effective in screening (Haring and Ridgeway, 1966). The teacher has greater opportunity than any other personnel to observe the children in the school situation.

In low socio-economic areas it has been estimated that forty per cent of the children have specific learning problems of some type. This is too large a population to place in special classes. In addition, recent research has cast considerable doubt on the value of special class placement for children with mild learning difficulties (Dunn, 1968).

A review of the literature has shown that children from low socio-economic groups show a deficit pattern in the areas of achievement with a corresponding deficit in symbolic language and perception. There is some evidence that this deficit pattern is more closely related to socio-economic status than ethnic group with ethnic group compounding the difficulties as the child gets older.

Objectives

An attempt was made over the past three years to investigate two approaches to learning in the regular classroom.

It was hypothesized that high risk learning disability children given the "traditional approach" would show less improvement in learning than would the children given the "modality approach" over a two-year period of treatment time.

Subjects

The eighty subjects selected for inclusion in this study were randomly selected from a larger population of 120 children in a large city elementary school with median family income in 1968 of $2,800. Only 19% of the children in fifth grade in this school reached or passed their expectancy level in 1968.

The children who met the following criteria served as subjects: (1) "normal intelligence" as determined by scoring between the 25th and 90th percentiles on Raven's Progressive Matrices test, (2) CA between 5.10 through 6.3 years, (3) had not repeated kindergarten and (4) no impairment in visual or auditory acuity.

Assignment of Subjects

The eighty subjects were divided into two groups and an initial comparison of eleven variables showed only one to be statistically significant; however, this was attributed to chance and not considered significant for purposes of the present study. The mean chronological age was 6.0 years and subjects came from families of lower socio-economic status.

There were forty-five boys and thirty-five girls with a median percentile score of 50 on Raven's Coloured Progressive Matrices.

Screening at the Kindergarten and First Grade Levels

A screening device for use by classroom teachers was developed. Its effectiveness was determined by correlating the results with a battery of validated learning ability tests. The areas of learning in the battery included visual perception, auditory perception, fine motor control, perceptual integration, body image, behavioral patterning, verbal and motoric expression and receptive language.

Program Development

The areas of learning difficulties were determined for each child. Experiences and materials were developed which were aimed at modifying their problems.

The children were randomly assigned to either the experimental or control groups. The control group was given the program traditional at the school (reading based upon phonics). The teacher screening device, the Wide Range Achievement Test (WRAT), was used at the beginning of the year and at the end of the school year.

A battery of learning ability tests was given eighty of the kindergarten children who fell between the 25th and 75th percentiles of the Raven's Progressive Matrices. The results of these tests were intercorrelated and correlated with achievement as measured by the Wide Range Achievement Test reading and arithmetic subtests. The abilities measured were gross motor patterning as determined by the ability to hop and stand on one foot rated on a 4-point scale; 5 subtests of the revised edition of the ITPA—motor and verbal expression, auditory and visual memory and grammatical closure; Peabody receptive vocabulary; the Figure-Ground Subtest from the Frostig Developmental Test; the visual achievement forms from the Purdue Perceptual Motor Survey scored for form and organization; the WRAT spelling test; the Horst Reversals as used by DeHirsch; DeHirsch's categorization test; Spencer's Memory for Sentences and the Wepman Test of Auditory Discrimination; behavior patterning rated on a three-point scale for attention span, preservation, motor activity, need for praise and rapport; and a human figure drawing rated on the inclusion of ten body parts generally included in kindergarten children's drawings. The following tests correlated with both reading and arithmetic achievement at the .01 level of significance: Figure Ground Discrimination, Auditory Discrimination, auditory memory, construction of the visual achievement forms, categorization, behavioral patterning, Peabody, and WRAT spelling. The ITPA auditory memory correlated at the .01 level of significance with arithmetic. When using a step-wise regression analysis with F set at the .05 level four factors were found to be significant predictors of reading achievement : Peabody, ITPA visual sequencing, the Visual Achievement forms-construction, and the Visual Achievement forms - organization. The significant predictors for arithmetic achievement were found to be the Peabody, Visual Achievement forms — forms and behavioral patterning.

Inservice Program

An inservice program was held with the first grade teachers. The results of the initial evaluations of the children were given to the teachers and three specific programs were begun, with major emphasis upon the auditory, visual or kinesthetic approach.

Treatment

The treatment included the Fernald kinesthetic approach, Sullivan Reading materials, tape recorders and earphones, as well as programmed arithmetic and reading. The children initially screened in kindergarten and given the modality approach in first grade were compared at the end of first grade and again at the conclusion of second grade.

Results

Significant differences between the groups were observed in visual perception and visual-motor association as well as auditory memory, with those given the modality approach to treatment showing the greatest improvement based upon the pre-test post-test group difference scores.

Both groups made significant increases in the mean total reading level; however, those given the modality treatment approach showed an increase of 10.5 months and the traditional treatment group, 8.9 months during the first year. The second year showed an increase of 11.2 and 8.3 months, respectively. During the pre-test post-test period both groups made significant improvement in general learning. Comparison of pre - test post - test difference scores revealed that the children given the modality treatment showed significant improvement in general learning, particularly in reading, over those given the traditional approach.

Discussion — The basic premise underlying this study was that the teacher must be aware of the child's style of learning and plan his treatment program accordingly. The teacher should ask himself:

What are the child's strengths and weaknesses?

What kinesthetic, visual, or auditory modality, or modalities did this task require?

What other situations does he approach in the same way?

What is common to them all?

The educational programme for a particular child should be designed to help him learn through his specific combination of sensory, intrasensory, intersensory, memory and motor skills.

It would appear that the school program should emphasize the specific disability area, but use the intact areas to strengthen the deficient areas. If the child has trouble understanding what he hears, visual or even kinesthetic cues may be incorporated within the auditory exercise to increase the probability of a correct response.

However, one must be careful not to overload the sensory channels, but rather utilize the one or two appropriate channels. The area of auditory-visual integration and the intrasensory approach is still in need of much investigation.

Evaluation does not stop, however, with the beginning of the remedial or educational process; evaluation is an integral and on-going part of the remedial program. If an activity proves ineffective, it must be recognized as such and replaced. No diagnosis is infallible, and no one activity helps all children. An on-going evaluation attests to the accuracy of the initial diagnosis and provides information on the effectiveness of the remedial program.

One point of caution is that even when a skill can be defined we are not sure how it evolves in development. It is possible that these various skills arise as a consequence of complex interactions of innate equipment, maturation, early acquired patterns, and early or late environment experiences including informal or formal training. Therefore we are not justified in implying a simple etiologic connection between the degree of development of perceptual skills and central nervous system equipment. Benton (1962) has demonstrated that there is no simple one-to-one correlation between even clearly demonstrable neurological deficits and psychological behaviors. There is evidence that children at "biological risk" and "cultural risk" display more disturbance of the development of such skills when compared to other groups of children. "Biological risk" children are those with pre - maturity, complicated pregnancy, later severe illnesses, and head trauma. "Cultural risk" children are those who come from disadvantaged environments.

Environmental and family conditions strongly influence the patterns of development of the child's perception, language, and cognition which in turn affect his academic and psychological performance. Children from disadvantaged populations, particularly minority groups, show lacks in perceptual discrimination, sustained attention and communication with adults for information. The child is usually not verbally oriented, lacks experiences in instruction, information and correction, and does not anticipate rewards for tasks completed. Therefore, *perceptual handicaps do not necessarily indicate central nervous system damage.*

Test behavior is only one source and at times a limited source of information about a child's perceptual, cognitive and motor skills. Behavioral observations in learning and non-academic situations also provide a rich source of information. Our knowledge is limited about the variety of perceptual, cognitive and motor skills involved in learning. At present no single test or battery of tests can capture them. While not discrediting tests, one needs to be aware of their limitations and of the continued importance of sensitive, curious, and careful observations. In particular, we should not just be interested in responses but also in how a child got to the responses, i.e. the process that went on within him. In this way, one can turn the test situation into an experiment, the goals of which are to find the conditions where a child can successfully master the task at hand. From such situations clues can be obtained for a remedial approach to that child.

One of our primary goals in education is to decrease the liabilities and increase the assets. But, sadly, we have all been guilty of labelling and forgetting the inter as well as the intro differences among children with potential learning problems.

What implications does this heterogeneity in children's learning approaches have for research on treatment? Obviously, a great deal. However, until we begin to apply diagnostic instruments effectively, we will not be able to describe handicapped children in those terms that impinge directly on learning; we will continue with singular characteristics and treatment. Once research in learning characteristics begins to bear results and we can begin to classify children in accordance with shared learning abilities or disabilities, we can then begin to identify specifics in subject matter and teaching systems that are relevant to the characteristics of the children. Differential treatment should be a natural outgrowth of differential diagnosis, medical, linguistic, or educational.

The results of the present study suggest several other possibilities for future research:

1. that the procedures of this study be replicated on a larger sample;
2. that a long-term longitudinal study is needed.

Meaningful research is both possible and desirable within the framework of the schools, although problems with implementation are to be anticipated. Some of the pertinent difficulties are time, funds, merit of project, and the need for co-operation with other professional groups. Collaborative effort of teachers and researchers and also availability of facilities for the collection and dissemination of data are required.

Sister M. Nicholas, Ireland

EARLY EDUCATION OF THE DEAF

After 30 years working with deaf children and their parents I am convinced that the successful educational treatment of all deaf children depends on the extent to which parents succeed in teaching language as a means of communication to the young deaf child. For too long we have been emphasising early schooling rather than early home-training and socialisation. Even our pre-school programmes have been more child-centred than parent-centred. Parents are the natural educators of both normal and deaf children. Not only are parents who are given guidance enabled to teach language, they are better equipped to understand and help their children in future schooling as well as in their integration into a hearing community.

The normal child learns language in such an incidental manner that only when something goes wrong do we become critically aware of his speech. The conversation between the mother and her hearing baby becomes the basis of language. His progress depends on his utterances which are audible to himself being responded to by his mother. Her conversation evokes a response from the child. She in turn expands the child's utterances. The rules of language by which words are put together meaningfully are learned inductively provided the child is constantly exposed to speech and to the corrective information offered by listening to himself, his parents and all those in his environment. Even though it appears that the hearing child learns language incidentally it is true to say that the mother teaches her child a mother tongue — as Bellugi and Brown (1964) have shown. She does this instinctively. A child with normal hearing will be retarded in speech development if there is no stimulation in his linguistic environment. Likewise the young deaf child must receive the necessary stimulation and reinforcement from his mother long before he is suitable for educational treatment in a School for the Deaf.

Communication Barrier

Deafness imposes a communication barrier between the mother and child. This in turn prevents the development of language. Such a state of affairs has devastating effects on the individual's social, emotional and intellectual development. Educationally there are fewer problems greater than those pertaining to deafness. Such a crippling handicap obviously should be diagnosed and treated as soon as possible. Since the optimum period for the development of language and speech in the normal child is the first three years of life, the child with a language handicap should receive maximum stimulation during that period. To-day the awakening of professional interest in developmental medicine and the psychology of early childhood; the availability of new information from research in the field of psycho-linguistics and electronics; and the emphasis on an interdisciplinary approach to diagnosis and treatment of handicapped children are all helping towards the ideal that deaf children should learn language in the very early years of life. If routine screening for hearing defects is available for all children between the ages of 6 and 9 months it is possible that most parents can be given a diagnosis before the child is 12 months. From the moment there is certainty as to the child's hearing loss the parents — especially the mother — should have frequent contact with specialists in the education of the deaf. Unlike the parents of the hearing child those who have a deaf child must deliberately set out to teach a mother tongue. They cannot do this without help from experts. Given suitably trained personnel it is comparatively easy to make guidance available to parents in areas of dense population but not in rural areas. In Ireland we have tried to solve some of the rural problems by setting up residential courses in parent guidance at a central school.

The course may last a week or two. Most mothers find it difficult to be away from home for more than a week. Ideally both father and mother should attend but an investigation of 46 consecutive cases attending the course revealed that in only 6 per cent of the cases did both parents attend. The initial course begins as soon as possible after the diagnosis of deafness and after the child has been fitted with a hearing aid. It is directed to the mother rather than the child. A social worker arranges for mothers and children to stay with a family who because of a close relationship with parents of deaf children and a school for the deaf can offer supportive guidance to a mother who may never have known deafness until it was discovered in her child. The maximum number of mothers attending any one course is restricted to three. They are required to attend the audiology clinic for a period of approximately 3 hours each day during which time they see a teacher of the deaf and a social worker. The members of the diagnostic team attached to the clinic — consisting of a psychologist, a psychiatrist and a paediatrician who has an interest in neurology — are also available for consultation. The aims of the initial course are:

1. *to help the parents to accept the diagnosis.* This particular aspect of the problem will need on-going guidance during the deaf child's school life and perhaps after it. However, success will depend to a great extent on the approach that is made during the initial course.

2. *to encourage them.* The mother who receives no response to her communication with her baby needs much encouragement and support.

3. *to meet other parents who have similar problems.* This form of group therapy is essential for those who feel socially isolated.

4. *to give them a glimpse of the possibilities that lie ahead.* It is therefore advantageous to conduct the course in an area where there will be access to educational and vocational centres for the deaf.

5. *to help them to grasp the implications of hearing impairment.*

6. *to help the parents to understand that the deaf baby has a vital need to communicate.* Some mothers give up talking to the baby when they discover that he is deaf. It has to be emphasised for them that the only environment in which it is possible to acquire spoken language is one in which speech is used. If deaf children are to benefit from oral instruction then verbal symbols for thought processes need to be established as early as possible.

7. *to give them a practical approach to home training.* This will include information about language development in the hearing child as well as specific help with language training for the deaf child. Emphasis is placed on the fact that language learning is based on the daily experience of the pre-school child in the home, as well as the need for the vocabulary connected with these experiences. In this part of the course it is essential to make clear to the parents:

(a) The proper setting of the volume-control of the hearing-aid so that the baby can benefit to the full from auditory feed-back. Great care should be taken that speech may be sufficiently loud but not too loud for the child. The possibility of injury to a baby's acuity by the use of speech at high intensities should not be overlooked.

(b) The importance of listening behaviour for linguistic development. The baby must be made aware of sound; have his attention directed to the source of sound — this will mean face-watching which is really the beginning of lip-reading — and receive constant speech stimulation from those in the environment.

(c) The two stages in language development — receptive and expressive — need to be explained in detail. Parents of deaf children are far more interested in what the children can say that in what they understand yet in normal speech development impression precedes expression. The normal baby must listen for many months before he can utter a single meaningful word. I never encourage parents to set out to teach speech as this is a highly skilled exercise. It is more important that they speak to the children and show pleasure when the children attempt to imitate their speech patterns.

(d) The importance of babbling for speech development. The child himself must babble as a result of auditory feed-back. As well as this the role of proprioceptive feedback as an aid for perception and recall of speech and language can be explained in very simple terms to the mother of a deaf child. The child's babbling must evoke a response from the mother. Invariably it has to be pointed out that these responses are useless unless the baby can see the mother's face.

(e) Finally, the place of lipreading supplemented by residual hearing or by vibration feeling and conversation about the child's daily experiences must be constantly emphasised for parents. It means that they have to slow up their work in the home and help the deaf child to share in their activities. A mother of a three-year-old deaf child wrote recently: "The mother has over 500 objects in her kitchen without moving out of it. She can talk all day, if she wishes, to the child. 'Let's sweep the floor, give me the brush, wipe the table (handing her the cloth), set the table (handing her the cutlery), here is the knife, the spoon, fork, etc. etc.' " The same mother wrote: "There is a great deal my child does not understand, so many common ordinary words which she still does not know; simple commands which she does not understand. One despairs more often than one cares to remember. When one says a word over and over again maybe for several days and still she does not know it . . . . . it is an effort for *all* in the house, not just the mother; the father and the other members of the family must also participate." I believe this type of language stimulation is far more effective than the rather structural approach which we have tended to use with small deaf children.

To evaluate the effectiveness of an initial course for parents of pre-school deaf children questionnaires were sent to 120 parents who had attended for at least a week. All the children enrolled were prelingually deaf. The etiology of deafness was given as follows:

Maternal rubella	21%
Rh factor	14%
Meningitis	6%
Genetic factor	20%
Unknown etiology	20%
Other causes	19%

The replies received showed that approximately 76 per cent of the mothers found the course helpful because it showed them that deaf children could be taught to speak. This may be due to the fact that many of the parents who had come from rural areas had had no contact with deaf people or with schools for the deaf. I believe that it is also an indication of the great stress which a deaf child imposes on his mother. A major effect of deafness appears to be isolation which inevitably leads to distortion of the relations between the child, his parents and other persons in his immediate environment. Much further research is required to understand the family implications of deafness. In a number of cases it takes an experienced social worker or teacher of the deaf quite a while before a parent will even admit that family problems exist.

Comments such as the following were frequent in the replies received:

"During the course I saw for the first time what could be done for deaf children."

"It helped me to come to terms with my child's handicap."

"Questions which had been tantalising me from the moment I suspected deafness in my child were answered for me."

"I believe I now understand the reasons for my child's tantrums."
(In 60 per cent of the replies there was a reference to the difficulties experience when trying to cope with tantrums. Quite a few mothers admitted that the tantrums became less frequent as the child learned to communicate).

"The course enabled me to meet parents who had problems similar to mine."

"I found that the stigma attached to deafness was not there any longer."

"I had an opportunity of talking to somebody who understood my problems."

On the other hand some parents who felt that they did not get sufficient help from the course commented:

"I expected too much"

"I realized for the first time that my child would not get a normal version of speech through a hearing aid".

"I realized what a difficult road lies ahead and I found the course depressing".

Possibilities

Very few comments referred to educational treatment, or to techniques used in teaching language to pre-school deaf children. Most of the parents were taken up with their own feelings and emotions. In an initial course then one can only help parents to cope with the emotional shock which the realization of deafness in a baby can bring and enable them to glimpse some of the possibilities that lie ahead. Such a course needs to be followed up by home visits by a teacher of the deaf. It is essential that the child be seen within his home environment. In their replies to the questionnaire 88 per cent of the parents asked for this type of on-going guidance as well as contact with a school for the deaf. In the remaining cases there was apparent complacency with a non-communicating child or a desire to have the child sent to a residential nursery school for the deaf as soon as possible. The communication handicap caused by deafness gives many mothers such a feeling of helplessness when dealing with their child that they need continuing supportive guidance. Sometimes it is sufficient for the visiting teacher to be a ready listener so that the mother and perhaps the other members of the family can express their difficulties in dealing with the child. Most frequently her duty is to give specific guidance in the teaching of lipreading and language.

Counselling parents whose child is making satisfactory progress is comparatively easy. The parents' emotional problems gradually become less acute when the child begins to make progress in lip-reading and speech. Work with such a child can be rewarding for a mother who fully realizes the difficulties that confront her baby. The greatest problems arise for both parents and teacher when the child is not making the expected progress in language learning. This situation is becoming commoner to-day as there are now more multiply handicapped children in our pre-school programmes. Increasing numbers of hearing-impaired children seem to have learning difficulties. Acceptance of the idea of a congenital language disorder has increased considerably of late. In a recent study of 55 post-rubella deaf children attending a school for the deaf in Dublin it was found that 47 of them had additional handicaps. In two cases the children had five additional handicaps. Home training for such children poses many problems for parents and teachers. In the case of profoundly deaf children who are also moderately or severely mentally handicapped it is important to make an early decision on the method of communication to be used. If oral communication is ineffective then the parents and nurses who look after these children might well be advised to use manual communication—beginning with natural gestures and later progressing to methodic signs and in some cases even finger spelling. It is tragic to see profoundly deaf children without a knowledge and understanding of simple gestures to indicate their needs. These children have a right to some form of communication. If given manual communication in the pre-school years they may eventually be considered suitable for non-oral departments which are now becoming a necessity in schools for the deaf. Experience in using both the manual and oral method in teaching the deaf has convinced me that the former can be used effectively with children who have lowered intellectual functioning. This is an area which calls for research because so many children are now considered unsuitable for oral schools for the deaf.

Before parents are willing to use manual communication they must be convinced of:

1. The ineffectiveness of medical treatment or surgery in the alleviation of the child's handicap.
2. The child's inability to benefit from oral methods.
3. The importance of communication for mental health.

Unrealistic Goals

Most parents set unrealistic goals for their deaf children. They may have read or heard about deaf people who have succeeded in becoming integrated into hearing society as professional men and women, and naturally, they conclude that such a goal is within reach of their child. Only by continual contact with the child's teachers are they helped to see that progress depends to a great extent on the child's innate ability. In working with parents the teachers need to take the personality of the parent into consideration. I have come across three types of parents each requiring support and guidance appropriate to his needs:

1. The well-adjusted parent who accepts the child's handicap calmly and sensibly. Family relations are usually satisfactory in a home where a child's

handicap is accepted. The parents have a practical approach to the child's educational treatment. Some of them have quite original ideas and teachers should encourage them to experiment. Such parents are glad to receive guidance and are eager to report on the child's progress.

2. The over-anxious parent who is more concerned about the child's deafness than about his physical, mental or educational development. Very often this type of parent is found in the professional class. He studies all the available literature on the education of the deaf and yet he fails to cope with his child in the home where tensions and strain invariably are present. He is over-protective thereby creating behaviour problems which the parent invariably attributes to deafness rather than to bad management. He emphasises schooling and formal education rather than the natural approach to language which is based on conversation about the child's everyday experience. Such parents need constant guidance. Their problems cannot be lightly dismissed. They need to see different types of hearing impaired children in order to help them to set realistic standards for their own children.

3. The helpless parent who fails to take action perhaps due to lowered intellectual functioning. He is quite satisfied with a non-communicating child or he may have so many personal problems to cope with that deafness in his child is not considered serious especially if there are schools available for educational treatment.

Effective guidance then must take parental attitudes into consideration. It is obvious that the person who is to guide all types of parents must be an experienced, competent, specially trained teacher of the deaf. After receiving basic training in the teaching of the deaf, such a teacher would need a period in a Nursery or Junior School for Deaf Children. This might be followed by a short course in parent counselling with a measure of observation and practical work in an audiology clinic where guidance for parents is available. This experience should help the teacher to gain an understanding of the variable factors which may affect linguistic attainment in deaf children. In training courses for teachers of the deaf to-day there is need for constant adaptation to suit the needs of a rapidly changing world which presents so many challenges to the person with a communication handicap. Fortunately the pooling of the findings from many disciplines is bringing about an approach to the educational treatment of deafness which because of its early start is bound to enable at least some deaf people to match their innate potential with satisfactory attainment levels. In fact, the hope expressed by Dalgarno (1626-1687) three centuries ago is now being realized. In my teaching experience I have indeed found some mothers "who have laid a good foundation of language in their deaf children even in the first stage of their minority."

Karin Lundstrom, Sweden

INITIAL SCHOOL PLACEMENT OF THALIDOMIDE CHILDREN

1. Number of thalidomide children born in Sweden and on the current register there:

Born 1959	3
Born 1960	33
Born 1961	38
Born 1962	35
Born 1963	2
Total*	111

*(total number of thalidomide children born 186; 75 died before 1969)

2. Eugenia Home (an institution for severely motor-handicapped children, including cerebral palsied) and its expert team developed a technique of diagnosis, treatment, prothesis-research and early training of the thalidomide children. Other institutions (for cerebral palsied and otherwise motor-handicapped children) also received the Th-children for treatment, etc. A consultant social worker was employed to give information and advice to parents and foster parents of the Th-children. She works in close co-operation with the medical experts.

3. The Th-children born before 1960 were not severely damaged.

4. Knowing that a group of about 30 children would reach compulsory school-age on the 1st July, 1967, the Swedish National Board of Education prepared their school-initiation in the following way:

Co-operation between the National Board of Education and the Eugenia Home expert-staff; pre-school teacher, medical experts, social experts to assess the status of every single Thalidomide school-beginner.

Session at the Board with experts (doctors, consultant psychiatrist, teachers, parents' association) to discuss the problem of education.

The Board presented alternative solutions to the children's school-problems:

(a) The child attends school in an ordinary class with remedial teaching, technical aids, transport to and from school, personal assistance, training in aids to daily living.

(b) The child attends education in a special class for the motor-handicapped with additional remedial teaching and personal assistance;

(c) The child gets schooling, medical care and treatment plus boarding in an institution for the severely motor-handicapped; additional resources include several medical specialists, nurses, speech-therapists, physiotherapists, occupational therapists, and speech-trained teachers.

The Medical Experts presented their treatment-programmes, including construction of and training in use of prosthesis.

The Parents presented their wishes and suggestions. All of them declared that they wanted to keep their child at home. (About 15 thalidomide children have foster parents).

5. The specialist-consultant of the Board of Education was delegated during 6 months for the main task of finding out the best school-placement of every single child. She visited every home, spoke to parents and child, contacted the medical specialist responsible for the child's treatment, assessed the educational needs of the child, visited his school-to-be, its head and (if possible) the teacher-to-be, gave information to all the people involved in the child's education (including the parents). The result was that most of the children, even the severely orthopedically handicapped, now attend ordinary classes.

6. For 1968/69 the procedure was similar.

7. During the years 1967/68 and 1968/69 the consultant has kept contact continuously with the schools which thalidomide children attend. Most of them need (and get) personal assistance (costs paid by government), transport, special technical aids, and pedagogical equipment.

8. Several surveys of the thalidomide children have been carried out:

(1) In June 1969 the Board sent out a questionnaire concerning the thalidomide children who had started school in 1967. 21 teachers rated 19 cases attending ordinary classes and 2 pupils attending special classes for slow learners. Ratings were on a 5-point scale with 3 representing average level in the class. Results were as follows:

TRAIT	LEVEL				
	1	2	3	4	5
Intelligence			13	6	2
Motor Ability		9	8	3	1
Working Ability		8	8	5	
Scholastic Attainments			15	4	2
Social Contacts (with classmates)			15	3	3
Social Contacts (with other pupils)		1	13	4	3

(2) *Contact between school and parents*

All teachers have had regular contacts with the parents:

18 personal contact
2 telephone contact only
1 telephone contact and letters;

(12 have had personal contact and additional telephone or written contacts: "contact-books")

(3) *Contact with school health office*
(additional to regular health control)

16 pupils	2 - 6 extra controls
5 pupils	0 extra control

(4) *Absence from school*

Less than 3 weeks	10 pupils
3 - 4 weeks	3 pupils
4 - 5 weeks	1 pupil
9 weeks	1 pupil
10 weeks	1 pupil (due to operation)
no information	5 pupils

(5) *Physiotherapy, ADL - training*

regular physiotherapy	8 pupils
regular physiotherapy + ADL	1 pupil
partial physiotherapy	4 pupils

(6) *Remedial teaching* (1 - 2 hours/week)

reading/writing disorders	1 pupil
typing	1 pupil
mathematics	1 pupil
during convalescence	1 pupil

(7) *Special technical aids*

specially constructed table/seat	4 pupils
specially constructed table/seat + typewriter	2 pupils
specially constructed table/seat + typewriter + special pencil	1 pupil
specially constructed drawing table	1 pupil

(8) *Personal assistance*

2 - 15 hours/week for 4 pupils

(assistants: 1 housewife, 2 lunch-room hostesses, 1 school-hostess).

19 teachers related that they had been given special information before receiving the handicapped child in their ordinary class through head-master, parents, school nurse or doctor, school psychologist or school consultant. (1 teacher: "no information was given"; 1 teacher no answer).

Special difficulties observed by the teachers are (in 3 cases) lack of concentration and retarded working capacity.

For next school - term teachers have ordered additional personal assistance for 1 pupil, and tape recorder, typewriter and pencil-lengthener for another four pupils.

(9) Results of a survey on school placement (1966-69) of 109 children with thalidomide and similar damage are given in the following table:

Survey on school-placement 1966-69 (109 children with thalidomide and similar damage)

Th. children born	Ord. class	Spec. class in ord. school	Spec. school for motor-hand. (boardg. school)	Spec. school deaf/blind (boardg. school)		Spec. school for ment. retarded	School start postponed	No information
1959: 3 ch.[1]	1		1	1				
1960: 33[1] ch.	22	6[2]		1	1	2		1
1961: 38[1] ch.	27	2[3]	1			2	3[4]	
1962: 35[1] ch.	26	4[3]	1	3			4	
1959-62: 109 ch.	76	12	3	5	1	4	7	1

1. personal assistance 1959: 1, 1960: 4, 1961: 5, 1962: 5
2. 1 slow learner. 1 slow maturer. 4 hearing impaired
3. 4 hearing impaired
4. 1 home-education

Ruth M. Lencione, U.S.A.

LANGUAGE AND SPEECH PROBLEMS OF YOUNG CHILDREN WITH CEREBRAL PALSY

Perhaps no other area in the field of handicap has received such significant attention in the past decade as has the disorder of cerebral palsy. In part this development has taken place because of a better understanding and definition of the condition. Cerebral palsy, a term once synonymous with Little's disease, has now grown to include manifestations of impaired neurologic function which include a variety of neuromotor, intellectual, sensory, perceptual, and behavioral symptoms which may occur singly or in combination and varying in degree (Denhoff, 1966). For this reason interprofessional understanding of the problem is essential. Educators must know the basic concepts involving the medical, psychological and therapeutic aspects of the problem. In turn the members of each discipline must be familiar with the procedures and techniques of the other professional colleagues with whom they work. One of the distinguishing features of current procedures is the determinative advances being made in this cooperative interdisciplinary action.

The origin of the interdisciplinary approach probably had its beginnings in the early 1930's when a number of educational, psychological, and medical concepts began to be widely accepted and vigorously pursued. Some of these factors consisted in (1) the concept of the whole child, (2) the application of knowledge about growth and development, (3) the inadequacies of rigid compartmentalization in specialty medical practice, and (4) the use of the team to deal with complex medical problems. In addition, recent findings in linguistics, psychology, neuropathology, and neurophysiology, aided by computer science, have stretched the boundaries of our knowledge about language and speech problems. As a consequence, the management of children with cerebral palsy who exhibit communicative disorders has undergone many changes because of these advances in our knowledge and understanding of the neurologically handicapped individual.

Language and Speech Therapy Status

In order to understand the present status of language and speech therapy of the child with cerebral palsy it is necessary to briefly review some of the major research and clinical studies which served as necessary forerunners for present methods. Less than twenty-five years ago the development of the cerebral palsied child was considered by many to be haphazard or "bizarredly different." Strauss and Lehtinen were among the first to state that "In its outlines the development of the brain-damaged child follows the same course as the normal child as it progresses through sensory, motor, perceptual, language and conceptual levels." Clinical experience has indicated that the cerebral palsied child does follow the same type of growth and development as the nonhandicapped child but that development may be either interrupted, delayed, or arrested in the developmental scale. Further, the brain damage in cerebral palsy is rarely confined to the motor areas. The child quite frequently has deficits in varying degrees of severity in visual, auditory, intellectual, and emotional areas as well. Distractibility, hyperactivity, or lack of attention span have all been cited as one of several interrelated behavioural patterns. The early literature on cerebral palsy was concerned with the nature of the motor "output." Within the past decade there has been a corresponding interest in the "input." Research in these areas has indicated that visual defects and visual perceptual disorders may play a far greater role in language and speech disorders than was formerly suspected. The trend in the findings concerning visual perceptual dysfunction would indicate that the spastic type is more subject to these disorders than is the athetoid. Most of the reports indicate that almost half of the spastics tested have some type of visual defect and that this problem is usually some degree of strabismus. Similarly, reports on sensory defects indicate that spastics have a greater loss in stereognosis, two-point discrimination, and figure-ground discrimination than do athetoids. One of the striking findings to come out of these investigations concerning sensory and perceptual disorders is that the degree of the involvement does not usually correlate with the perceptual disorder.

Reports concerning tactile-kinesthetic disorders give indications that the tactile disorder may be greater than has been formerly recognized. Ayres (1964) describes a form of "tactile defensiveness" which causes individuals with neurologic disorders to withdraw from activities that produce discomfort. One can infer that if this tactile defensiveness occurs in the organs of the speech mechanism, it may account for the fact that clinically it is known that cerebral palsied children tend to vocalize and verbalize less than do other brain-damaged children. When one considers the impact of all of these associated disorders in varying degrees of severity, in addition to the motor disorder, an understanding of the multiplicity of delays which can affect language and speech development becomes apparent. It is for this reason that the speech clinician needs to have a thorough understanding of the types and kinds of associated disorders which may occur in cerebral palsy so that therapy may be adapted to meet whatever needs the child presents.

Several Categories of Language Disorders

Because cerebral palsy is a multifaceted disorder the varieties of language dysfunctions are myriad. Within the past two decades research and clinical reports have attempted to delineate some of the types of problems. In general, these problems fall into several broad categories which include breathing — phonatory — articulatory disorders, and language disorders. Among the first to report on breathing disorders were Perlstein and Shere (1946) who noted that "reversed breathing" was found in the spastic and tension athetoid. Palmer (1952) reported gross deviations of inspiratory-expiratory movements, shallow breathing, thoracic-abdominal opposition, and little or no abdominal excursions in the communicative performance of one hundred cerebral palsied individuals. Achilles (1955-56) found the most frequent anomalies were irregular cycling, rib-flaring, and reversed breathing. Westlake and Rutherford (1961) described the retention of infantile rates of breathing, irregularity of breathing, and reversed breathing as the most common types of breathing problems. Most of the studies tended to agree that the breathing problems exhibited by the individual with athetosis are more severe than for those with spasticity.

Therapy designed to establish more regular breathing patterns has been conducted by a number of investigators. Dixon (1956) employed a chest respirator and reported that after breathing therapy significantly smaller chest and abdominal excursions occurred with a reflected improvement in intelligibility for monosyllabic words. Wilson (1956) used an instrument called the Electro-Lung, which works by direct electrical stimulation of the thoracic and abdominal muscles, to promote more regular inspiration and expiration.

Wilson found that the results of this type of breathing therapy resulted in a significant improvement in the rate of respiration which was maintained for at least four weeks following termination of therapy. Both speech intelligibility and articulation were improved with his group of eight athetoid children. Plotkin (1957) used the Electro-Lung experimentally with seven tension athetoids and found significant increases in vital capacity, reduction in the rate of rest respiration, and significant improvement in over-all intelligibility of speech. Subsequently, Jones, Hardy, and Shipton (1963) used a special modification of the Lung on two children for a period of nine months. They found that greater modification of breathing patterns occurred and carry-over appeared better in terms of reduced rates of rest breathing, increased tidal volume, and increased inspiratory and vital capacities, while expiratory reserve measures decreased.

At the same time emphasis was being given to an understanding of the sucking, chewing, and swallowing patterns of children with cerebral palsy. Keats (1965) has stated that breathing, sucking, chewing, and swallowing are ". . . . the so-called vegetative activities. These patterns appear to be mediated at a fairly low level in the central nervous system. However, voluntary inhalation and exhalation for speech are controlled by higher centers in the motor cortex which is also true for the other muscle groups such as the lips, and the tongue." The nonhandicapped child is born with a strong sucking reflex. The child with cerebral palsy quite often is unable to suck at birth and often cannot nurse. In such a child whose feeding reflexes are weak or absent, training to promote adequate feeding reflexes is thought by many to form the background for the emerging movements that will subsequently be necessary for complex articulatory activity. With the advent of this type of thinking the speech therapist has increasingly been seeking the help of the occupational therapist in order to help promote feeding activities which will later aid the child in using the speech mechanism for verbal communication.

Kind and Degree of Language Delay

The kind and degree of language delay in children with cerebral palsy has been variously investigated. Achilles analyzed the communicative anomalies of 151 cases diagnosed as spastic, athetosis, ataxia, and rigidity. He found that of the total group 66 per cent presented severe communicative problems in which the subject had either no speech or no more than one year of oral language development. Twenty per cent were rated as having a fair means of communication, in that they were able to make their primitive wants known at a level of eighteen to twenty-four months of communicative development. The remaining group, 14 per cent, were rated as having good communicative ability in that they were able to express themselves adequately, but their speech was characterized by articulatory lapses and irregularities in rhythm, rate, and accent.

Hopkins et al. conducted a comprehensive evaluation of 1,224 cases of cerebral palsied children examined by the New Jersey Crippled Children Commission. The findings indicated that 51.9 per cent of the spastics, 88.7 per cent of the athetoids, 72.1 per cent of the rigidities, and 85.3 per cent of the ataxics had defective speech. In a study of 192 cerebral palsied children ranging in age from one to fifteen years, Lorenze et al. classified language deficiencies. The authors report that approximately one-half of the children had delay in the development of language; one-quarter had inadequate speech-sound production but had adequate language development; and a small number had a combination of both difficulties.

In a study of the oral language development of two hundred cerebral palsied children, Dunsdon found there was an average retardation in the development of vocabulary, verbal recall, and reasoning of from three to four years as compared to normal children. In a study of seventy-four children between the ages of two and seven years, Byrne found that the median age for the acquisition of words was fifteen months; for two-word sentences the median age was thirty-six months; and for three-word sentences the median age was seventy-eight months. Byrne compared these data with means for normal children and found that the cerebral palsied group was three months delayed in the appearance of first words, twelve months delayed in the use of two-word sentences, and forty-eight months delayed in the use of three-word sentences.

In a study concerned with the rate of developmental progress in cerebral palsied children, Denhoff evaluated sixty-five children and found that 74 per cent were delayed 12 months in the use of single words, and the average age for onset of the first words was 27.9 months. In another study of thirty-nine cerebral palsied children, Denhoff found that 46 per cent were not using sentences until after 30 months of age; and the average age of the onset of two- and three-word sentences was 37.4 months.

Love investigated the language of twenty-seven children diagnosed as spastic and athetoid types between the ages of ten and fifteen years. He matched the experimental group with a control group of physically handicapped children with no obvious speech and language problems. The results of this study indicated significant differences between the experimental and control groups in the number of words available on an expressive naming vocabulary test, but *no* differences on a receptive vocabulary test. The cerebral palsied showed no greater discrepancy between the items correct on the receptive and the expressive vocabulary tests, which suggests the absence of a clinical naming disorder. No gross differences were apparent in the language used to describe performance on an object matching test or in language used in describing sorting, pictorial themes, or in defining words. On the basis of this study, Love concluded that disorders of comprehension and formulation of oral symbols often attributed to the cerebral palsied, were not present in the group studied.

Myers evaluated the language disabilities of a group of ninety-two cerebral palsied children diagnosed as spastic and athetoid, ranging in age from four years to nine years. The experimental group was matched with thirty-two normal children. The study was designed to investigate the difference between spastic and athetoid children through the use of the Illinois Test of Psycholinguistic Abilities. The findings indicated that the spastic group was significantly superior to the athetoid group on the Automatic-Sequential Level factor; that is, they excelled on tasks dealing with the ability to retain visual and/or auditory stimuli presented in a meaningless or rote frame of reference. The athetoid group was superior to the spastic group on the Representational Level factor. This factor requires the ability to deal with linguistic symbols internally within a meaningful frame of reference. The spastic group scored higher than the athetoids on Auditory-Vocal, Automatic, and Auditory-Vocal Sequential but were inferior to the athetoids on Motor Encoding and Auditory-Vocal Association. The results indicate that spastic children can be expected to be inferior to athetoid children on language tasks at the representational level, but superior on tasks involving the automatic-sequential level.

On the basis of this research, Myers indicates that the athetoid group needs therapy in language with particular emphasis upon: (1) auditory closure, (2) visual closure, (3) vocal imitation of auditory stimuli presented in sequence,

(4) motor imitation of visual stimuli presented in sequence, and (5) auditory discrimination. For the spastic group, Myers states that therapy should be focused on the cognitive aspects of language which include: (1) auditory and visual perception training, (2) classification and categorization tasks, (3) sorting activities prompted by auditory or visual stimuli, (4) gross and fine motor activities, (5) pantomime, and (6) story-telling "Show-and-Tell."

Articulation Defects

The articulatory status of the cerebral palsied child has received a great deal of interest and investigation, particularly in the areas of speech-sound testing and therapy. Using quantitative procedures, Irwin has reported a comprehensive analysis of the speech-sound equipment of the cerebral palsied child with reference to ability to produce sounds according to (1) manner, (2) place, (3) voicing of articulation, and (4) types of errors.

In a study of the difficulty of consonantal sound production with 265 cerebral palsied children ranging in age from six to sixteen years, Irwin found that when the manner of articulation is considered, the labial sounds are the easier to produce and the dentals and glottals are the most difficult. The order of difficulty of consonants varies when classified according to the place of articulation. Generally, the nasals are least difficult in the initial and final positions, and the fricatives and glides are most difficult in all three positions. Stops appear to be least difficult in the medial position and semivowels in combinations vary somewhat among the three positions. When the cerebral palsied children's scores were evaluated in terms of the order of difficulty with voiced and voiceless consonants, Irwin's data indicated that there was a tendency for the voiceless consonants to be more difficult than voiced sounds.

In a study to determine the relationship of substitution and omission errors in a group of cerebral palsied children ranging in age from three through nineteen years, he found that omissions significantly exceeded substitutions when errors were considered. This finding is the reverse of what is found in the articulation errors of non-brain-damaged children. In nonhandicapped children the progression has been found to be greater for the number of substitutions than omissions.

In a study of the speech-sound ability of 129 children ranging in age from eight to fourteen years, diagnosed as spastic and athetoid types, Lencione found that when the position of the sound was considered, the rank order of correct production progressed from initial to medial to final position. For the place of articulation the findings indicated that consonantal proficiency was highest for the tongue-tip simple, lip, and back of tongue sounds; and that the tongue-tip complex sounds were significantly more difficult than the sounds in the three other categories. There was a marked relationship between age and consonantal proficiency. At eight years the percentages of correct consonant production in the initial, medial, and final positions were 75, 73, and 71; at fourteen years they were 93, 90 and 92. When errors were considered the incidence of substitutions and omissions was essentially equal, but there was a larger percentage of omissions as compared to substitutions in the medial and final positions. Analysis of the order of difficulty with six voiced sounds (b, d, g, v, z, th) and the voiceless cognates indicated that the voiceless sounds were considerably more difficult to produce correctly.

Byrne evaluated the speech-sound status of seventy-four children ranging in age from two through seven years, diagnosed as spastic and athetoid types. She found that the greatest accuracy for correct responses was in the initial position, followed by the medial position. Few sounds in the final position reached the 72 per cent level of proficiency for this age group. Consonantal proficiency was highest for the bilabial sounds followed by the tongue-tip simple, back of tongue, lip complex, and tongue - tip complex sounds; in general, voiceless sounds were more frequently misarticulated than their voice cognates.

In an investigation of the hypothesis that the athetoid child does not achieve the same efficiency in speech-sound production as that of children diagnosed as spastic, Lencione compared the speech-sound proficiency of spastic and athetoid groups ranging in age from eight to fourteen years. She found that significant differences occurred in the mean number of consonant elements produced correctly. When the position of the sound in the word was considered, the spastic group was consistently more proficient than the athetoid group. When the manner of sound production was compared, the spastic group was substantially more proficient in ability to produce both the voiced and voiceless sounds, and this proficiency was considerably more marked with the voiceless sounds. In general, the pattern of performance of the spastic resembled that of seven-year-old children, whereas the athetoid group tended to resemble more closely that of children below six years of age.

Byrne, in a comparison of spastics and athetoids ranging in age from two through seven years, found that the overall scores for tests of speech-sound proficiency were not significant, but that in all of the subtests the spastics had higher percentages or mean scores.

For the purposes of this Conference the review of recent findings has been necessarily summary in scope and there is a large body of information which adds further verification to the findings listed here. In addition, although again it is not within the province of this paper, there have been significant advances in the understanding of physical therapy systems. Of special note has been the growing and presently implemented interaction of the physical, occupational, and speech therapist in the management of the child with cerebral palsy. These three disciplines usually work in close cooperation to facilitate procedures to aid the child in activities of daily living, ambulation, and oral language.

In essence, our present knowledge about the problems implicit in cerebral palsy indicate that in broad outlines language and speech development follows the same course as that of the nonhandicapped child through sensory, motor, perceptual, conceptual, and emotional stages but at a slower or interrupted rate. In order to meet the needs of the child with cerebral palsy, language therapy presently has incorporated all of these findings and from this background there have emerged procedures which are based upon a systematic developmental approach. The writer has designed and uses the Diagnostic Developmental Approach to Language and Speech Therapy in association with the physical and occupational therapist. The following construct is based on the recapitulation of the sequence of development and is designed to meet the child's needs *without any consideration to chronological age.*

The Diagnostic Developmental Approach

In the Diagnostic Developmental Approach the first stage of development is considered to be the basic readiness stage for those activities which are considered to be necessary for the emergence of oral communication. The general readiness stages include (1) reasonably efficient sucking, chewing, and swallowing patterns; (2) breathing patterns that will accommodate breathing for speech; (3) sustained phonation; and (4) vocalization at the babbling stage. Therapy is implemented to correspond to the child's developmental level and techniques are designed to encourage prespeech and language activities which have been either missed or delayed. Thus, if breathing patterns for speech-breathing are not adequate, the speech clinician can combine her activities with those of the physical therapist in providing therapy designed to encourage more adequate inhalatory-exhalatory cycling. Similarly, if the child has not acquired reasonably efficient sucking, chewing and swallowing patterns, the child is referred to the occupational therapist to activate these patterns. In turn the speech clinician can supplement these activities in the speech session. All of these activities should be carried out as much as possible in a coordinated integrated program in which each member of the physical, occupational, and speech team supplements and augments the work of the others.

A number of speech activities designed to encourage babbling may be used. The following outline is suggested: (1) visual recognition, in which the child is shown a familiar object; (2) tactile recognition, in which the child is given familiar objects to handle and to feel; (3) auditory recognition, in which the child is given the name of the object while holding it in his hand; (4) kinesthetic recognition, designed to encourage the child to use motions connected with the object; and (5) verbal stimulation in which the child is encouraged to imitate sounds in his environment and to recognize voice.

The second stage of development includes (1) the emergence of the symbolic use of meaningful words; (2) vocabulary growth; and (3) sentence development. Training for the association of sound and word is started at this stage using a combination of visual, auditory, and tactile-kinesthetic stimuli. This phase of speech training should implement the functional application at the level of psychological and physiological readiness which the child has attained. The child is prepared for language acquisition by the implementation of techniques designed to help him differentiate between colour and forms, connect objects with the verbal symbol, and supply labels for the objects in his environment. No attempt should be made at this stage to introduce articulatory skills. Rather emphasis is placed on experience, sensations, and the development of percepts.

The third stage of development is designated as the one in which maturing skills emerge. Assessment of articulatory proficiency and speech-sound discrimination is made at this time. The direct approach to the development of muscular control and articulatory skills is started. Specific procedures involving motor, kinesthetic, and phonetic placement for direct muscle training to facilitate the production of speech sounds may be used.

As has been stated previously, it is not possible to delineate a systemized or single treatment plan in the management of the cerebral palsied child. Essentially, therapy must be individualized to meet each child's special needs. An attempt has been made to describe the various types and kinds of dysfunctions which may interrupt, delay, or arrest speech and language development and to suggest a rationale of diagnosis therapy which will guide the speech clinician in working with cerebral palsied children. The therapeutic techniques discussed are to be considered as guidelines to be used in diagnostic therapy as well as in conjunction with the physical and occupational therapist.

Corrie Reye and Beatrice Le Gay Brereton, Australia

PROGRESS REPORT ON THE USE OF A PRE-SCHOOL TRAINING PROGRAMME IN PERCEPTUAL AND VISUO-MOTOR SKILLS WITH CEREBRAL PALSIED CHILDREN

The Theory of the Plan

Early in 1963, it was decided to attempt treatment of specific visuo-motor and perceptual defects in Cerebral Palsied children. At this time there was a mass of inco-ordinated information in the literature about the failure of Cerebral Palsied children on various visuo-motor and perceptual tasks. What training existed was attached to vague concepts of "body image" etc. Acceptable behaviour at particular age or mental age levels was ill-defined. Most of the information available was about children over the age of 10 years.

The tasks on which older Cerebral Palsied children were reported to have failed were examined carefully and similar tasks were chosen which were appropriate for young Cerebral Palsied children. These were administered to a sample of seventeen Cerebral Palsied children and to about 30 normal children aged from 4½ to 6 years. Test programmes and treatment were built from this information and gradually improved as additional evidence was acquired.

The skills considered are all non-verbal and involve touching, moving and feeling objects and relating this information to that which is acquired through vision. These, normal children acquire before or about the time they commence formal schooling. The level at which treatment is to be pitched is assessed by the Occupational Therapist. The programme of testing is supervised by one of the Centre's psychologists.

Treatment is given individually about three times a week. The degree of structuring of the treatment plan permits the application of learning theory and also an easy supervision and continuity of treatment. Within the structure of the plan the therapist designs treatments that are interesting to the particular child and which appear to be a spontaneous game although they are actually carefully planned.

More detail is available in the authors' 1967 handbook entitled "Cerebral Palsy: Basic Abilities" and published by The Spastic Centre of New South Wales.

The Early Treatment and Training of the Children with whom the Basic Abilities Plan has been used

Most of the children have attended The Centre from a very early age. Physiotherapy and parent training in management have been given therefore before the children start school. From about 3½ years of age they attend daily. At this stage pre-school teachers supervise free choice activities and group activities (such as singing). Movement is encouraged as a means of exploration. Individual physiotherapy continues and if indicated, speech therapy is introduced.

A general programme of perceptual and visuo-motor training is introduced in what is called Group Occupational Therapy. The child is grouped with 4 other children. Activities include playing with soap froth, finger painting, playing with dough, washing dolls' clothes, etc. Opportunities are taken as thev arise for emphasising tactile experience and body position by *verbalising* incidents in which touching, rubbing, movement or banging into things occur, e.g. "Is this the sore place? It's right on *top* of your *head*". Various action games can be adapted for quite little children.

Games in pedal cars or "Follow the Leader" create appropriate opportunities for comment. Attention is drawn to the position of objects in play and games using directions involving getting into, under or around things are used. Visual attention is encouraged in games of "I Spy Something Blue" or "Hunt the Thimble", "Blowing Bubbles" and so on. Much of the therapist's attention is directed to enabling the children to take part in the experiences offered. Many tend to lack the initiative and curiosity of other children and need to be encouraged to try new activities and to vary their activities. Many have to be encouraged to adopt postures that reduce abnormal muscle tone and at the same time help the development of head control and the use of the arms even if only for gross movements. Attempts are made to arrange a working area in which hand and eye can be co-ordinated. This is all part of a general encouragement of interaction with the environment in which verbal situations are also introduced. At the same time, attempts are being made to assess the child's readiness for the individual guided training of the Basic Abilities Plan.

First, in order to get to know the child, the therapist takes the child from the group for about five half-hour interviews at about weekly intervals. This is called "Basic Play Assessment". During these sessions the Therapist, after consultation with the child's physiotherapist selects certain working positions for the child. The therapist goes on to observe:

What size toys he manages best.
How much he can move around on the floor.
Whether he uses one hand, both, or either hand.
Whether he can carry out simple tasks to direction.
Whether he can sort big and little objects.
Whether he will copy something done by the therapist.
Whether he will make a definite choice.
Whether he will join in an activity with another child.
For how long he will co-operate with the therapist, in a game he enjoys, etc.

When this information is available the psychologist tries to assess three basic features:

Verbal Level (ability to respond to a heard word by selecting one of four pictures).
Visual Level (ability to match a picture of, for example, a dog, by perusing pictures of dogs of different sorts).
Visuo-motor Level (ability to copy the examiner folding a piece of paper horizontally, diagonally, etc.)

The plan itself is brought into their therapeutic programme about the time they can show evidence of either verbal or non-verbal abilities at about a 3½ year old level. They are likely to continue for about 1¼ to 2½ years. In all about 220 children attend school at The Centre. Of these about half are below 9 years of age and at any given time 50 or more will be working on the treatment plan.

The General Structure of the Treatment Plan

The treatment plan aims to provide an abundance of the non-verbal experiences the Cerebral Palsied child is likely to have missed. It also aims to define precise levels and types of difficulty and to pin-point treatment accordingly. The reason we use this precise programme can best be explained thus:

Some normal people have specific intellectual limitations or "blind spots". It is a matter of conjecture whether these results from organic differences or differences in experience[1]. There is little doubt that Cerebral Palsied children are particularly prone to variations in ability and that limitations occur frequently at perceptual and visuo-motor levels. Since the motor handicap of these children is due to brain damage, it is likely that a specific intellectual limitation will tend to be put down to associated brain-damage at intellectual levels. It can however, be equally claimed that they have also had *in many ways* an abnormal or inadequate background of experience. It would appear, again, a matter of conjecture whether their limitations are organic or experiential in origin. Training normal children in skills they are particularly bad at, is far from easy, and one can assume that training has to be well defined to be effective.

For this reason any given activity is used for a *specific purpose* and "areas" of treatment are defined. The same sort of game might be used for example to highlight one purpose in one section of the plan and another purpose in another. The "areas" or "sections" are listed as follows:

Section I: Touch and movement (or tactile-kinaesthetic perception).
    IA: Obtaining information from actual contact with objects.
    IB: Appreciation of body position, i.e. the child's awareness of his own body and the area it occupies in space.
Section II: Visuo-motor skills.
    IIA: Appreciation of the distance, position and order of objects.
    IIB: Planning the movement appropriate to the situation.
Section III: Visual perception.
    IIIA: Obtaining information from visual observation.
    IIIB: Selecting objects for attention.

Within these "areas" treatment is designed as follows:

Section IA: emphasises the information that can be obtained from touching things. Experience of contact is highlighted or repeated by using selected interesting and varied materials. We believe we are treating a skill which is important from the time objects are first clutched till about 6½ years of age. [2] [3] [4] It seems possible that, in normal children, this information then fades into the background. It can however be of special value to children who find it hard for some reason to use visual perceptual skills effectively.[2]

Amongst Cerebral Palsied children one will obviously find some with virtually no experience of this nature. In these cases we think it worthwhile to move their hand over objects and textures, etc. We also find some who *dislike* contact and this may well be significant. Most significant however appears to be an inability to identify flat shapes correctly. This ability is characteristically learnt by normal children at 4½ to 6 years of age. Cerebral Palsied children fail *at this point* although the identification of objects (learnt between 3½ and 4½) develops surprisingly normally. The treatment plan involves therefore an overall experience with textures, shapes, weights, solidity, etc. in formal discrimination and in less formal experiences in cooking, collage, printing, rubbings and so forth. Particular stress is laid on the development of recognition of flat shapes when behaviour is at about a 5½ year old level.

Section IB: emphasises the ability to use the body as a point of reference. Lack of "body image" is mentioned frequently in literature about Cerebral Palsied children supported mainly by suggestions that Cerebral Palsied children have an imperfect knowledge of their own body. This is shown, it is said, in difficulty in dressing themselves and drawing a man. We believe that both these tasks involve also motor planning (IIB) (getting *into* the clothes and *drawing* the man). The physiological background to using the body as a point of reference would appear to depend more on the righting reflexes which give information about tilt and the degree and distribution of muscle tone which regulate posture than on knowledge of body parts as such. The task we believe we set ourselves is to encourage the development of the use of the body as a point of reference despite the motor handicap which obviously will affect this skill. To do this we encourage the child to become increasingly aware of where something touches him (the appreciation of touch is associated with body righting reflexes)[5] and of where his arm is as it is moved by the therapist and after it has moved (this is an attempt to give correct patterns and to make the muscular sensation involved more conscious). We try to make the child aware of where objects in the room are in relation to him and of the verbal tags "right" and "left". We also, at a later stage, try to make him aware of the reverse sequence of data in moving to the left and right of a point of reference.

Most Cerebral Palsied children make fairly normal progress up to a 5½ year level. At this stage the following levels have been reached:

(i) awareness of *where* something touches one is quite precise (as shown in tests of finger localisation);

(ii) awareness of gross movement is quite effective (as in normal children playing statues or when a child is placed in a symmetrical position and asked to choose a picture of a child who is in the same position);

(iii) both ipsilateral and contralateral movements can be copied sitting beside the examiner in front of a mirror.

The problem lies therefore in the development of awareness of *fine* movement, and in harder tasks in right-left discrimination. These appear to be two separate skills. The initial programme involved the emphasis of feeling contact by means of a running commentary verbalising the situation (for example in dressing up using small items like spectacles and necklaces). Awareness of gross and then fine movement is taught by moving wooden figures and in action games and finger plays. The programme also attacks the appreciation of where objects in the room are in relation to one, and the words "left" and "right" are introduced casually. For example in playing "Doctors" the therapist may say, "we will bandage your left arm, the one on this side", but would not ask the child to bandage his left arm. Modifications will include the extension of work on fine movement and the harder aspects of right-left discrimination. The use of visual clues will be emphasised.

Section IIA: emphasises the appreciation of the distance, position and order of objects within reach. The treatment is aimed at making the children more aware of the position relative to them, of objects as they reach for them and also of the visual recognition of successful movement. Allowance is made for the possibility of inaccurate concepts built from abnormal movements or from an abnormal relationship between eye and hand function. This section is usually commenced on the floor with such activities as:

(i) "Blocks in the Box Race" in which positioning of objects in taught in *setting out* the blocks.

(ii) "Farm Yard Games" which introduce the concept of distance from each other as well as distance from oneself.

(iii) "Clockwork Toys" or "Guess When to Pounce" involving judging the position of moving objects within reach.

Assisted movement is used as a learning device. Spatial concepts are emphasised by situations involving "on", "in", "near", "over", "under", etc. in which appropriate language is used.

Treatment moves from the floor to the table top and thence to a smaller or circumscribed work area in the form of white work boards. The therapist commences by making something with a definite beginning and end, gradually building from one unit to more difficult series and patterns and thence to quite accurate pattern copying on 100 hole peg-board. By doing this, she introduces not only the concept of position and the relationship of distance from each other and themselves, but also the concept of order of objects. The method depends on *both* the teacher and the child having a board. They sit side by side and, when possible, work from left to right and from top to bottom of the work area.

We believe we are trying to encourage the development of a skill (or skills) which is important from the time objects are first reached for till about 8½ years of age. Our early investigations suggested that about 50% of Cerebral Palsied children had difficulty with spatial concepts (as in choosing which block is closer, in copying fences or squares on peg-boards, in copying block patterns or dot patterns, etc.). Some appeared confused by sorting out a *lot* of positions, being able to do one or two quite adequately. Some appeared to have difficulty with the relationship between pieces rather than position within an area. Some had difficulty with the actual position of the board being copied from — they could work effectively, say, if it was above their board or on one particular side of it. Sometimes recommended working positions are reported for use in the school room. More recent information suggests that most difficulties in this section appear to be avoided through appropriate training at an early age, and also that, after training, the positioning of material on a page in school is accomplished quite readily.

Section IIB: In planning the movement appropriate to the situation the child not only has to judge a precise distance but make an appropriate muscular action from the visual observation. In other words he has to get the hand to do what the eye sees. By 4½ a normal child would be able to draw straight lines and circles but have difficulty with precise up-and-downess or flatness, or with joining several lines into shapes. Visual judgment is well ahead of motor planning. At 4½ a normal child would be able to match a diamond to a similar one even amongst a number with relatively small difference between them. Even at 5½ he would have difficulty in planning the movement to copy it.

Our information about Cerebral Palsied children suggests:

(i) that it is relatively harder for them to control vertical than horizontal lines;

(ii) that they have special difficulty in the angulation of oblique lines,

(iii) that movements may be executed in reverse of their intention.

At the time the development of accurate angulation should take place Cerebral Palsied children may even become emotionally disturbed and regress in their actual drawing or writing ability.

Treatment differentiates between horizontal, vertical and later oblique lines and teaches the child to feel them in his own body and then represent them on paper. To date we have attempted to control reversing in error by teaching the child to reverse at will.

When a child's development in this area is extremely weak we have found it particularly resistant to treatment. In some cases treatment is terminated when we are sure that the child understands that he has a special problem and that he is able to avoid it in the school room by typing.

Section IIIA: Survey of current opinion suggests more than one interpretation of the part played by vision:

(i) it is sometimes said that visual perceptual skills are based on earlier learnt tactile-kinaesthetic information;

(ii) it is sometimes said that even from a very early age visual information dominates in perception and that information from other senses plays a minor role;

(iii) it is possibly true that with girls vision dominates throughout but that boys tend to use tactile-kinaesthetic information more than girls between the ages of 6 and 11 but that both before and after these ages vision predominates.

Our own experience suggests that on the whole visual perceptual problems are not as marked or as frequent in Cerebral Palsied children as are tactile and visuo-motor anomalies. Initially training in visual perception copes with the general disorganisation of the Cerebral Palsied child. We try to encourage the child to base judgment on visual clues. We try to train attention and to encourage a meaningful interpretation of what is seen. Thus training is commenced by watching or touching moving objects whose flight is mainly out of reach; by trying to encourage observation through sorting shapes and identifying similar ones in the room visually; by identifying a whole from seeing part of it; and by playing guessing games such as "What did I take away?" to encourage immediate memory.

Visual perception is of course a complex skill with many facets. The tasks actually used as training procedures fall into three main categories, i.e. those demanding:

(i) the interpretation of wholeness in broken patterns and the appreciation of the perceptual constancy of things with the same meaning presented in somewhat different ways;

(ii) the analysis of detail;

(iii) the ability to retain a visual image long enough and clearly enough to manipulate it mentally.

The therapists' general commentary on treatment does not suggest that Cerebral Palsied children are prone to excessive errors. The most frequent and prominent defect appears to lie in the third group of tasks (that is in the ability to hold visual images in mind). This appears to be difficult if there are a number of visual images and then only if they are shapes. Children unable to do this could handle a sequence of visual items provided they were *not* shapes. Particular stress is laid therefore on training this particular skill.

Section IIIB: Other visual perceptual skills are emphasised in Section IIIB — in selecting objects for attention. This involves discrimination in noticing or sorting the *many* items within the visual field at any given time. These objects may overlap each other (figure-ground perception) or be confused by a quantity of other objects (perusing or scanning skill).

The first main object of training is to increase the child's ability to ignore the objects not to be attended to, i.e. to increase his tolerance of the distractible elements in the situation. The theory applied is basically familiarisation, i.e. one is not distracted by familiar sounds or sights (such as the clock ticking) as much as by unfamiliar ones. Activities include games such as "I Spy Something Blue" which make children more conscious of their environment. This leads into various figure-ground tasks and is ultimately tested by means of Figure-Ground Perception Tests.

Therapists' reports suggest that, unlike the classical "brain-injured" child, Cerebral Palsied children rarely have special difficulty in visual discrimination because of the overlap of figure and ground. Those that may have, responded quite effectively to the treatment in the Basic Abilities Plan. This is in agreement with our general clinical observation that most "distractible" behaviour in Cerebral Palsied children tends to disappear by about 10 years of age being apparently a feature that is secondary to their basic handicap.

The second objective is to increase the number of items that can be observed without being confused by the quantity of items.

Scanning and perusing may well be, for Cerebral Palsied children, a significant feature of visual attention. Its development has never, as far as we know, been adequately explored in normal children and at this stage our testing is not at a level to warrant comment. Observation of behaviour in treatment would suggest that the most prominent difficulty lies in sweeping the glance from the right end of one line to the left hand edge of the next. This is attacked in "Driving down a Zig-Zag Highway" and by verbalising this movement when using a scanning machine.

THE EFFECT OF TREATMENT

General Observations:

There appear to be several fairly obvious effects of using the programme. The standard of treatment is high. The therapists have a clear idea of what they are trying to achieve and the psychologists much more information on which to plan for the child and, later, for other children. It is also fairly clear that whether or not we start with a child who is sufficienly organised to attack a learning task we finish with one who can. This appears to occur because, by using a programme, the tasks are pitched accurately at the learning level of the child — the point at which correct responses are possible, and frequent, but do not always occur.

Response to Specific Difficulties:

Some indication of the effect of treatment was obtained from a series of follow-up tests given to 10 trainees at 7 to 10 years of age. These children were a random sample of those who are not too heavily handicapped for progress to be assessed. They were tested in each section in the following way:

Section IA: Hidden shapes were manipulated and identified with shapes drawn on a card.*

Section IB: (a) The child's arm was moved through a path describing a shape and the child had to identify the shape.*

(b) Questions involving right-left discrimination were asked.*

Section IIA: Dot patterns were copied.*

Section IIB: The accuracy with which copied figures were correctly aligned was measured.*

Section IIIA: (a) The children were asked to notice similarities and differences in diagrammatic pictures of chairs, moons, ladders, etc., the differences involving the position of whole objects or parts or details.*

(b) The children were asked to find a remembered shape among a number of somewhat similar shapes; and a series of remembtred shapes among a set of 6.*

Section IIIB: The children were asked to find line-drawings of objects in pictures in which the line-drawings overlapped.*
No test of Perusing or Scanning was used.

Intelligence was measured at about 5 years by means of the 1960 Revision of the Stanford Binet and at 6 to 9 years by means of W.I.S.C. or W.P.P.S.I. as appropriate.

These tests were used in the day-to-day programme of treatment and assessment and for this reason no attempt was made to treat them as an accurate numerical series of scores. Since perceptual skills are closely related to conventional measures of intelligence a correction for mental age was made in a general way only when an overall degree of retardation appeared to be present.

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*Tests used were as follows:

IA: Ayres' Manual Form Perception Test.[3]

IB: Birch's Visual Kinaesthesia (adapted).[4] Right-Left Discrimination Developmental Schedule Based on a number of tests and not treated numerically at this stage.

IIA: Frostig's Spatial Relations Test.[6]

IIB: Fuller & Laird's Minnesota Perceptuo-Diagnostic Ttst.[7]

IIIA: Frostig's Position in Space.[6] Skemp's Memory Cards.[8] Our own test of Immediate Memory of Shapes (not unlike ITPA Visual Sequencing). Hiskey's Visual Attention Span.[9]

IIIB: Ayres Figure-Ground Visual Perception Test.[10]

The most prominent feature of the analysis was the continuing presence of certain marked defects in the children. This would appear to represent a basic difficulty in the appreciation of what might best be described as tilt, angulation or alignment. This would appear to affect (or be associated with difficulty in) tactile or kinaesthetic recognition of abstract shapes and the ability to hold a series of shapes in mind long enough or clearly enough to use them in resolving data. This feature is, at this age, and with the present treatment, far from resolved. In noting this it is worth drawing attention to an earlier finding that defects in angulation or tilt were found to improve in the Cerebral Palsied population at age 11 plus.[1] It could well be that this improvement will appear earlier in the trained children but at this stage this group of children are still too young for this to be shown. Also the present analysis of the effect of treatment is, without doubt, giving us information by means of which the problem can be attacked more effectively — in fact the whole problem appears to be markedly clarified even at this stage.

Another prominent feature of the analysis was the relative absence of certain defects which are frequently ascribed to "brain-injured" or Cerebral Palsied children. These included the appreciation of distance, position and order of objects and the appreciation of figure-ground relationships. It is suggested that these are secondary problems arising as a result of the confusion caused by the first, or by the child's general inability to interact with his environment. It is also suggested that as these skills are very relevant to the use of books in reading, writing and drawing, the fact that one can train a child to start school without disabilities in these areas could well affect success and confidence in the school situation appreciably.

A third feature is the relative lack of defective visual perception in relation to the marked prominence of defect in tactile, kinaesthetic and visuo-motor areas.

Relationship between Response to Training and Progress at School

One would hope to find this training in visuo-motor and perceptual skills resulted in a greater degree of academic success than might otherwise occur, a better balanced adjustment to a handicap (with intellectual and/or emotional gains), and possibly a more even profile on tests of intelligence such as W.I.S.C.

Only ten cases in the 7 to 10 year age group can be assessed with any degree of assurance.

All seem basically happy and present well although five have faced up to considerable frustration for one reason or another, and have passed through turbulent periods.

An examination of scores on the Arithmetic Test in W.I.S.C. or W.P.P.S.I. indicates that 3 scored particularly poorly and four were a little below what might have been expected. Most of the weakest mathematicians were among those with visuo-motor defects. This could have some significance in relation to aetiology. More important however is the point that it may be possible to anticipate at 5½ that mathematical failure is likely to occur. This could well lead to a direct attack on concepts of size and quantity.

Three of the ten children were particularly adept at reading, four were learning, and three were slow or very slow to learn. Figures for the incidence of poor reading skills in the children attending this Centre with I.Q.s over 70 are assessed at ten years of age. It is likely that this group will compare quite favourably with an earlier population[11] but they are still too young for a comparison to be made. Of three particularly facile readers, all came from the five cases with residual visuo-motor defect. Of three particularly poor readers, two had no prominent perceptual problems. The inference is perhaps that failure in reading is associated with secondary perceptual problems rather than with primary visuo-motor ones. Since the former respond to training the approach to reading should become relatively easier.

The relationship of training with scores on the W.I.S.C. will be assessed later by comparison with a control series based on an earlier population with which they will be matched.

Lastly, may we emphasise again that, except in rare cases, early and grosser perceptual development is generally fairly normal. Perceptual anomalies appear *during* development. The points (of which we are now aware) at which development is particularly hazardous are these:

(i) the ability to identify shapes from haptic perception alone—an ability characteristically learnt at 4½ to 6 years of age;

(ii) the ability to identify shapes by passive movement — an ability characteristically learnt at 5 to 8 years of age;

(iii) the ability to copy a diagram within about 3 degrees of its correct alignment — an ability normally developing quickly between 6 and 8.

(iv) the ability to manipulate the right-left concept in difficult tasks — an ability normally developing after 5½ years of age;

(v) the ability to point to a series of more than 2 to 3 shapes after having been shown them once — an ability that matures after 5½ years of age.

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CONCLUDING ADDRESS

by James Lumsden (England), Co-ordinator of Discussion Groups

I will attempt to give a general summary of the discussions which I have heard or heard of.

I have five or six points and my main headings will be the discussion on assessment, on parents, on teachers, on methods of teaching and kinds of schools, on results and on community support.

We all work in inter-professional surroundings. Doctors speak to therapists, therapists to teachers, teachers to parents, and all to children. Are we sure that what we say goes in? Our experience this week has not been wasted if it has high-lighted this point, that we must be very careful in our inter-professional work that we are really understood by our listeners.

Assessment

The first main point of this Seminar on the education of young children has been the need for assessment. Individual assessments have sometimes been in error in the past. We have classified deaf children as sub-normal; we have classified children as sub-normal who were only culturally deprived, and so on. We must get good assessments. But assessment is a time-consuming process, and in terms of professional time very expensive — expensive in the use of rare skills. We should use it strictly for important purposes, for example to decide whether a child is fit to begin education. If we have to decide whether that education can be provided near his home, in a day-school, in an ordinary school, or a special class, or at a distance in a boarding school, we have to assess. When we come to teach him we must be sure that our failures cannot be decreased by a better assessment of the child's potential. Let us think of assessment, not of a child, but of the needs of the child.

Again, discussion brought out that an accumulation of data about a child, no matter by what sophisticated means, is not assessment. The assessment is the evaluation of the data. So much data is accumulated and not evaluated This is waste. We must at all times think of the practical conclusions which we are to draw from it for the future of John Smith or Paddy O'Gorman. This is what will be affected by our assessment.

Another point on assessment is that some people seem to confuse it with diagnosis. Diagnosis is an essential step towards an assessment but the diagnosis that a child suffers from the rubella syndrome or from spina bifida is very far from telling us what his educational needs are.

Then again if the assessment is done in an office, in a clinic, or in a consulting room, we are in danger of omitting consideration of his environmental experiences since birth. We must think of assessment in terms not only of the child's abilities and personality but also of his environment.

Assessment, of course, takes time and it is never finished. After making a decision to do something about a child we must find out whether our decision was right. This involves reassessment. Assessment may be regarded as a process where the response of the child to the educational stimulus that we surround him with becomes part of the assessment of his readiness for the next step.

Parents

In the assessment process parents can give invaluable information. Indeed, neglect of such information may lead to grave injustice. But the parent will not give you the relevant information unless he trusts you and knows what you are after. No school education will be effective unless backed by the parent. Therefore it is worth while considering whether we should regard special education as a matter only of the education of children. Unfortunately some school systems and legislators think only in terms of teachers and schools instead of thinking that parents are equally in need of our help if we are going to educate their children properly.

Teachers

But who is to make the contacts with the parents? On the whole the training of teachers has not been directed towards this.Many of them don't want to do it. Some professional organisations of teachers have been very lukewarm about taking on any responsibilities with regard to parents who are regarded in most cases as rather a nuisance. On the other hand many teachers who wish to do it don't find themselves very well equipped. Should teachers be trained to be a kind of social worker also? Clearly, here is a new field for inter-professional co-operation and training. Mr. Cave pointed out that this was being explored at the present time in England where the Seebohm Committee on the integration of services has made certain suggestions for helping the link between the school and the home.

A great deal of attention has been given at this Seminar to questions relating to the training of teachers of young children, but no detailed conclusions were come to and I am glad that they weren't. We are not, on the whole, very well equipped to pass judgment on the training of teachers. Just as there are experts in the field of special education, there are experts in the field of teacher-training and I don't think there are very many among us. But questions were at least asked. We know that everybody in special education ought to have basic training in how young children — normal and abnormal — develop. There must be a basis of the normal development of children. But how is this to be obtained? One thing appears to differentiate between the training of teachers of normal children and teachers of special education. Basically the training of the teacher in ordinary education in all countries is designed to equip him to deal with the class, in other words, with a group of children. It may be ten children or forty or fifty, but it is a group. If we get someone who isn't trained as a teacher with 30 or 40 children in front of him — pandemonium. This is the special skill of the teacher.

But for special education you need another skill — the skill of being able to study the individual *in* the group. I do not mean taking him out of the group and studying him, as the psychologist usually does, in an office. I mean studying him effectively while he is in the group and with the rest of the group about him. This is the specific skill, I think, of the special education teacher. He also needs enough expertness, of course, besides this general skill, to know about defects of sight and hearing; defects of movement and clumsiness; defects of attention; inability to form concepts and so on. But more than his knowledge of the defects he must have knowledge of the educational consequences of the defects.

Methods of Teaching

Methods of teaching are very important if the teacher is going to carry out his designs on the children. It is interesting how few special methods there are for the handicapped under the age of 6 or 7. We have been learning of some of the newer ones, and I think there will be more in the future, particularly those automated methods of which we have been hearing, but at the present time those automated methods of instruction are playing a very minor role in special education in most countries. They usually involve expensive apparatus, very careful planning and more help from outsiders in the making of programmes than most teachers can obtain. While we can look forward to developments in this line we need to keep ourselves abreast of the developments in ordinary schools such as, for example, the language laboratory. There are not yet very many special methods for the handicapped young child. It is attitudes, observations and sympathy which mainly seem to be required of the teacher.

Society's Contribution

We passed on in our discussion to consider what society can do for the education of its handicapped children. Here we ought not forget that the best aid to special education is to reduce the number of the handicapped. Polio is now practically extinct among young children in parts of Northern Europe and Northern America. Tuberculosis, which used to be one of the biggest causes for special education, is practically extinct among English children. We, as educators, should not forget that the medical profession are doing their utmost to reduce the need for special education. More power to their elbow.

But handicapped children exist and will go on existing — we are not going to be out of a job. The first task of society is to find them and here Canon Bastible and Mr. Haskell showed the need for really careful community-based schemes. Having found them we must make educational arrangements to suit their abilities and the community in which they are to be educated. We cannot compare the values of schemes in different countries unless we know the kinds of community in which the schemes operate. We can evaluate a scheme only in relation to its own culture. We have heard of residential special schools and of day special schools; of ordinary schools — what the Americans call regular schools — and in them of special classes; of teaching in ordinary classes like some of those that Mrs. Lundstrom was telling us about for thalidomide children; of tutorial arrangements such as those Mr. Bowstead talked about; and of peripatetic teachers going around to help the normal school teachers. Among those we can surely find something which suits the climate and the culture in which we are. I hope that there will always be variety of schools and that there will be no single pattern to which all children's education will have to conform.

There is a third obligation on society; to assess constantly the value of the arrangements which it has set up. We know that the arrangements in our own countries have altered and improved. This results from a continuing evaluation of the arrangements which have been made. In making this re-evaluation each of us must be professionally careful never to give the impression that those of our colleagues who are working in a form of school or arrangement different from the one that we think best, are not doing a good job. In this respect, I think that the Seminar has been deficient. A number of people have given evidence of the value of arrangements in day schools, ordinary classes, and special classes, but I can't remember anyone, except Mother Nicholas, who stood up and claimed that there were advantages in a residential school placement. Every country has residential schools and I hope no one who works in one is going away from this conference thinking that they are harming children by having them in a residential school. I know no research evidence whatsoever that the child in a residential school which is a good one of its kind has been harmed by this. I would rather say that every kind of school has its own danger points, difficulties, and successes. We must try and evaluate our own systems and see where they can be improved. There are good and bad day special schools; there are good and bad ordinary schools; there are good and bad boarding schools. Whatever we decide on must be good of its kind.

What next must we do? We must be realistic about our results. We must not expect the impossible. We cannot cure blindness, or deafness, or cerebral palsy. But it is not "normal" for children to be blind, or deaf, or cerebral palsied. So we mustn't expect them to be "normal." We have trouble with their level of aspiration and with their parent's level of aspiration. Mother Nicholas said that some of the parents who came to her went away feeling disappointed that even the best speech of the deaf children in her school seemed, to them, so abnormal. All teachers of the deaf agree. So we must be realistic about our efforts without being disappointed that we haven't made our handicapped children in all respects like others. They will be different although, we hope, not strange.

Lastly our community, our society, must finance our arrangements. Unfortunately, because we are not financiers, we have not had to discuss this. But if we are going to get money we have got to get it from somebody. We must have public support and public support is chancy. We can nearly always get public support for a basic educational system. All countries feel that it is due to their society to have compulsory free educaion for everybody for a certain period. But to get money for pre-school education for handicapped children is much more difficult. As someone said last night, popular *support* is necessary .

Can ISRD, can you, each one of you, when you get home help to enlist popular support in your community for the development of pre-school education and the education of young handicapped children? I ask you to do this not as teachers or psychologists or doctors or social workers or school administrators, but as educated enlightened citizens. We had a marvellous example of such action last night at the public meeting. This is the kind of thing that each of us in our own small way ought to be doing; not merely talking to the converted but talking to the sceptical.

Can we carry away four things from this International Seminar? First of all inspiration: There were certain papers given here which really inspired us.

Second, some new knowledge in our own field. I am sure that every one learned something of relevance to his own profession.

Third, a better appreciation of the work of those in other fields of special education. The people concerned with speech perhaps got something out of contacts with people concerned with mental retardation, and so on.

Last, better appreciation of the different problems of different countries and of the ways in which each one of us can help the others. Perhaps we have met someone who said "In my country we have got something to show you". My first incentive to go abroad after the war came from meeting Mr. Vlietstra at a London Conference who told me "there is something for you in deaf education in Holland", and I went and saw. This kind of thing happens. The educational problems of different countries can best be understood by studying in those countries. And here in Ireland, of course, how much help we have had from living here towards understanding something of the local problems of special education.

Now, Ladies and Gentlemen, can we go away and say we've got these things: inspiration, new knowledge in our own field, better appreciation of the role of others in special education, and better appreciation of the different problems of different people in different countries? If so, our discussions have been worthwhile.

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